

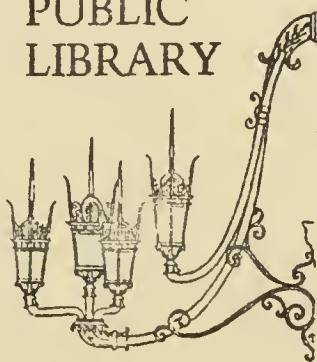
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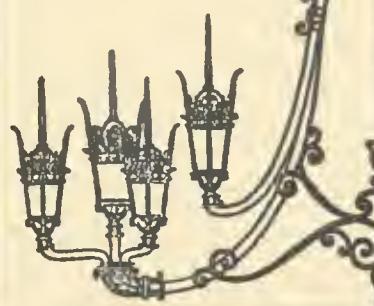


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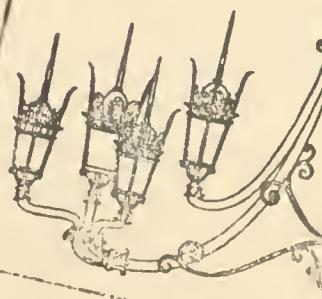
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Submitted to:  
The Boston Redevelopment Authority

Developers:  
HBC Associates (Fan Pier)  
The Boston Mariner Company (Pier 4)

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MAR 16 1987





*Fan Pier and Pier 4*

*Executive Summary*

*Infrastructure Report*

*Prepared for the Boston Redevelopment Authority*

*March 1987*

**Preface:** Boston's infrastructure needs, like those of most older Northeastern cities, are great. Water, sewer, drainage and utilities services have been in place for many years and, in some cases, must be refitted to deal with the demands of growth and development. Additionally, water quality in the harbor has become an over-riding policy issue because of new federal and state mandates to clean up the harbor. Any new developments, like Fan Pier and Pier 4, require a special sensitivity to infrastructure needs. The Fan Pier and Pier 4 developers have worked to ensure that the projects enhance Boston's future infrastructure needs, and are doing so at no public expense.

**Aims:** The Fan Pier and Pier 4 developers are committed to helping to improve the quality of water in Boston Harbor, and to upgrading utility and other services in the immediate area. To accomplish this, they will undertake a whole series of measures, including improvement, reconstruction and/or construction of sewage lines, water lines and drainage facilities, planning of gas, electric and telephone service expansion, and other activities. The design of these systems is being guided by areawide plans, prepared at the developers' expense, which have been subject to extensive agency/utility review and coordination.

**Specific Measures:** The development of Fan Pier and Pier 4 will mean substantial improvements to the infrastructure systems of South Boston and nearby areas of the city. The highlights of the new systems, and the developers' commitment to implementing them, are presented below (and in greater detail in the body of this report).

**Water Supply.** The developers will upgrade high service and low service water systems along Northern Avenue, in addition to building all new water systems on the development sites. In upgrading the high service water system, the developers will clean and line with cement the existing 16-inch high service main. An upgrade of the low service water system includes a new 12-inch low service line for the length of existing Northern Avenue. Planning, engineering, and construction of these systems is being done in consultation with the Boston Water & Sewer Commission. To reduce water demand and to minimize sewage flows, the developers will conduct an in-depth study of water conservation that exceeds the state building code requirements.



Fan Pier and Pier 4  
Executive Summary  
Infrastructure Report  
Page 2

Sanitary Sewer. The developers will reconstruct the sanitary sewer in Northern Avenue in addition to building all new sewer facilities on Fan Pier and Pier 4. The developers are working toward agreements with Massport to allow, in the short-term, use of Massport's sewer along Northern Avenue and, over the long-term, a new sewer crossing Massport's Commonwealth Flats. To rectify long-standing problems with off-site sewage systems, the developers have committed to reconstruct a portion of the North Branch of the South Boston Interceptor at the corner of A and West First Streets in South Boston. This will eliminate current dry weather combined sewer overflows and will dramatically reduce the incidence and volume of wet weather overflow.

Storm Drainage. An entirely new drainage system on the sites will be built by the developers, including water pollution abatement facilities. Off-site, the developers will fund the reconstruction of a portion of the drainage and sewer facilities south of existing Northern Avenue to the extent necessary to satisfy the 2:1 Inflow/Infiltration (I/I) reduction goals of the Massachusetts Water Resources Authority and the Boston Water & Sewer Commission for the projects. The combined effect of the storm drainage and sewer improvements will be to reduce substantially combined sewer overflows in comparison with present conditions. These improvements will lead to a significant improvement in the water quality of Boston harbor.

Gas, Electric and Telephone. The developers will continue their close coordination with various utility companies. Costs for installation of new systems will be borne by the utilities based upon expected revenues from the Fan Pier and Pier 4 developments.

Conclusion: The Fan Pier and Pier 4 developments are providing a model for responsible infrastructure planning and implementation which should set an example for other developments in the city. The developers have committed several million dollars to the improvement of areawide infrastructure. The results will benefit service provision to South Boston and the city as a whole, while sewer and drainage system improvements will lead to a better, cleaner Boston harbor, all at private, not public, cost.



Fan Pier Development/Pier 4 Development

INFRASTRUCTURE

Developers:  
HBC Associates (Fan Pier)  
The Boston Mariner Company, Inc. (Pier 4)

Prepared by:  
Skidmore, Owings & Merrill  
Parsons, Brinckerhoff, Quade & Douglas

Submitted to:  
The Boston Redevelopment Authority



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The purpose of this report is to present information on infrastructure planning and developer commitments related to the Fan Pier and Pier 4 Developments. The report has been prepared at the request of the Boston Redevelopment Authority (BRA) to describe planning for areawide infrastructure systems, to present the analysis of project effects on public and private utilities, and to document commitments made to mitigate any impacts. The Developer commitments--finalized during the public review process and confirmed in this document--will result in an improvement to water quality in Boston Harbor with the construction of the Fan Pier and Pier 4 Projects.

Four chapters and related appendices make up this report. Following this introductory chapter is a reprint of the Infrastructure chapter from the Fan Pier and Pier 4 Final Environmental Impact Report (EIR) (November 1986). The technical analysis and mitigation measures, which constitute the EIR Chapter, provided the basis for the coordination process with state and local agencies that led to the series of developer commitments presented in Chapter Three.

Chapter Three, Water and Sewer Commitments, documents in one place all infrastructure agreements made by the Developers. The program of infrastructure improvements to be undertaken by the Developers addresses areas of particular concern to both state and municipal authorities, including: sewer system capacity, combined sewer overflows, 2:1 Inflow and Infiltration



(I/I) reduction, off-site connections, separated sewer and storm drainage systems, and water conservation measures. The commitments will result in an improvement to water quality in Boston Harbor.

The fourth chapter, Infrastructure Schedule, summarizes the responsibilities and timing associated with each proposed utility system plan.

The appendices, which conclude this report, reprint the three letters that provide the official record of signed commitments between the Developers and the Boston Water and Sewer Commission (BWSC) and the specific detail of all the Developers' water and sewer infrastructure commitments made in this report. Also attached as appendices are three letters on the provision of gas, electric, and telephone service to the Projects.



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INTRODUCTION

This chapter is a reprint of the Infrastructure chapter from the Fan Pier and Pier 4 Final EIR (November, 1986). This technical analysis and the resulting mitigation measures led to the series of Developer commitments presented in Chapter Three.

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SUMMARY

The Fan Pier and Pier 4 Developments are expected to generate wastewater at the rate of approximately 790,000 gallons per day, with a peak waste water flow of 1,450,000 gallons per day. Sewage from the two Projects will be discharged to a new Boston Water and Sewer Commission Sanitary Sewer in Northern Avenue. Storm drainage for the two developments will be discharged to the Boston Harbor by way of on-site collection systems, with appropriate water quality control measures. Water demand for the two developments has been estimated at 880,000 gallons per day. Project demand for these utilities, as well as electric, gas, and telecommunications systems demand, will exceed existing systems capacity in the absence of any future improvements.

Final EIR infrastructure analyses for the Fan Pier and Pier 4 Developments have centered on the investigation of the long-term areawide infrastructure planning for the Fort Point Channel/Commonwealth Flats area. In on-going consultations with public agencies and utility providers and the public and private development interests in the area, the developers have researched and presented conceptual plans for water, sewer, and other utility systems. Implementation of these



areawide system improvements will require continuing coordination and engineering efforts. However, the developers, the utility providers, and major future users have agreed in principal to the infrastructure plans proposed in this Final EIR. Furthermore, the developers have committed to participate in the continuing coordination effort and the construction of needed facilities.



Construction and  
Operations Issues  
**Infrastructure**

---

**INTRODUCTION**

The purpose of this analysis is: to describe the existing sanitary sewer, water supply, storm drainage, electric, gas and telecommunications systems in the development area; to establish conceptually the long-term infrastructure requirements for the entire Fort Point Channel/Commonwealth Flats area; to determine any specific short-term effects the proposed Fan Pier and Pier 4 Developments might have on existing systems and to examine measures to mitigate adverse impacts.

The Final EIR Infrastructure analysis incorporates on-site information available for the Fan Pier and Pier 4 Developments based on on-going design efforts being carried out by the proponents as well as area-wide information gathered during infrastructure master planning effort requested by the Secretary of Environmental Affairs. This information is presented below in an effort to define the level of initial impact of the Fan Pier and Pier 4 Developments and the long-term development impacts on the infrastructure systems in the Fort Point Channel/Commonwealth Flats area.

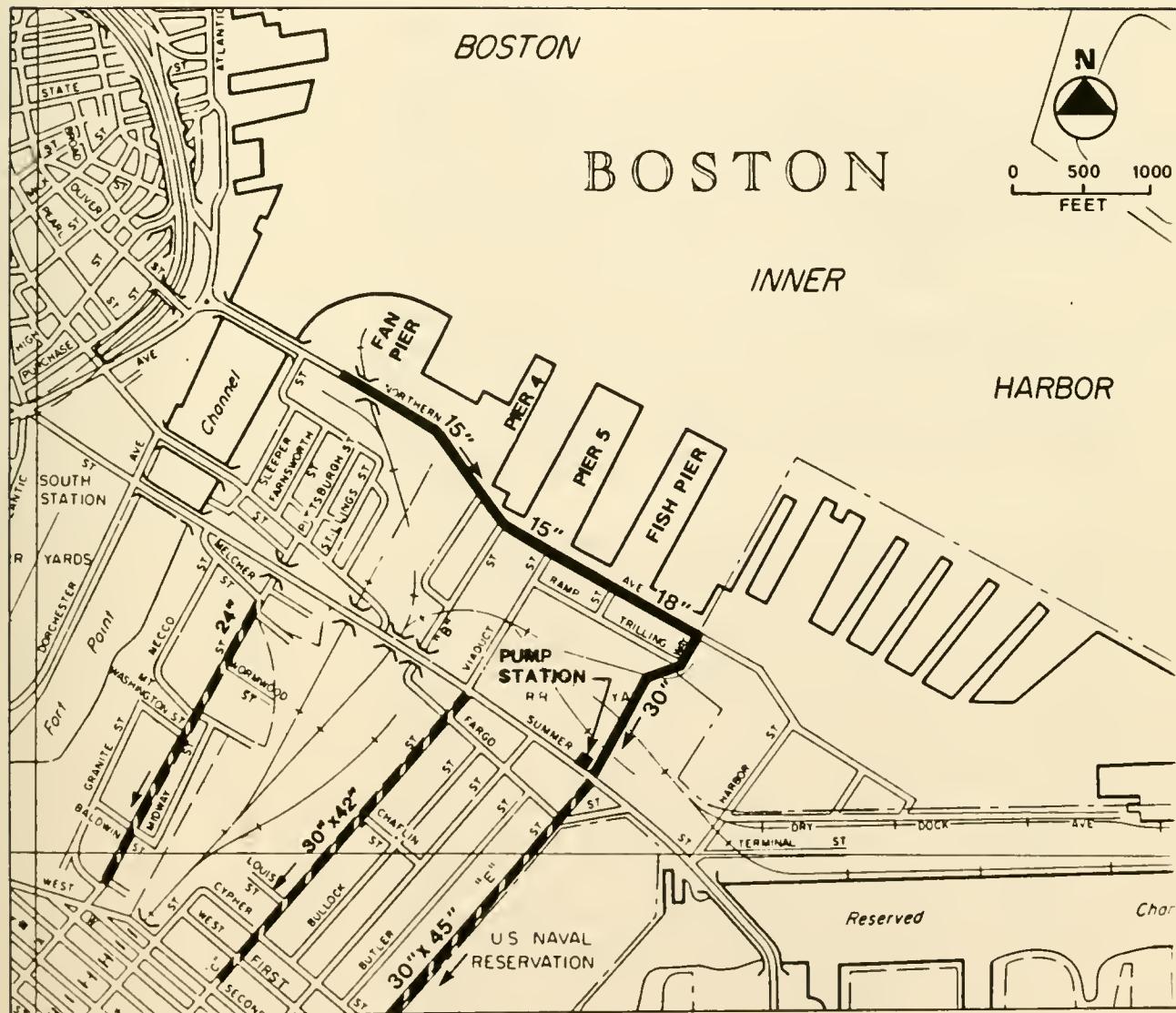
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**DESCRIPTION OF THE ENVIRONMENT****■ Sanitary Systems**

The sanitary sewer system serving the Fan Pier and Pier 4 Development sites is operated and maintained by the Boston Water and Sewer Commission (BWSC). This system is shown on Figure VI.2-1. There is a 15-inch sewer in Northern Avenue extending east from the Fan Pier to 50 feet west of Viaduct Street. BWSC has checked this sewer and reports it to be in generally good condition except for a low spot in a 200 to 300 foot section near Pier 4. From 50 feet west of Viaduct Street, the sewer discharges to a recently constructed 18-inch diameter pipe that extends to the Trilling Way/Northern Avenue intersection. At Trilling



**FIGURE VI.2-1**  
**Location Plan**  
**Northern Avenue**  
**Sanitary Sewer**  
**System**





Way, sewage flows into a newly constructed 30-inch trunk line which proceeds southward, where it joins an 18-inch sewer at a pump station at Summer and "E" Streets. The pump station discharges to a 30-inch x 45-inch sewer in "E" Street which connects to the North Branch of the South Boston Interceptor in West First Street. This Interceptor, as shown on Figure VI.2-2, connects directly to the New Boston Main Interceptor which transports flow to the MDC Columbus Park Headworks. Sewage is pumped from the Headworks to the Deer Island Plant via the 138-inch diameter Boston Main Drainage Tunnel. At Deer Island, sewage receives primary treatment and chlorination before being discharged into the Boston Harbor.

#### System Issues

Combined Sewer Overflows. The discharges from combined sewer overflows into the Harbor are a source of pollution during heavy rain storms. However, dry weather discharges also occur at certain combined sewer outfalls. In general, dry weather discharges are caused by infiltration and inflow (I/I), insufficient system capacity, tidal waters entering the system and pumping failures at the Deer Island Treatment Plant.

There are neither combined sewers nor combined sewer outfalls/overflows in or near the immediate project areas. BWSC has indicated that sewage overflows do occur in the sewer system where there are combined sewers, namely down stream of the Summer Street Pump Station, including the North Branch of the South Boston Interceptor.

The February 1985 Final Draft Facility Study prepared by Metcalf & Eddy, Inc. for BWSC indicated that flow rates up to two and one-half times the average dry weather flow do not result in overflows along the North Branch of the South Boston Interceptor. When carrying three and one-half times the average dry weather flow, the Interceptor surcharges just upstream of the "A" Street siphon and an overflow occurs at the regulator located at "D" and First Streets. The BWSC has not recorded any overflow occurrences at this regulator for any dry weather event since March 1980. A profile of the interceptor at this flow rate of three and one-half times the average dry weather flow, as prepared by Metcalf & Eddy, is shown on Figure VI.2-3. In their Project Information Form submitted to (DEQE) in December 1982, O'Brien and Gere identified several wet weather overflow points along the North Branch. Figure VI.2-2 shows the locations of these overflows. Overflow occurrences will be reduced when the North Branch of the South Boston Interceptor is cleaned (the Metcalf & Eddy study reported deposition in the sewer ranging from 5



FIGURE VI.2-2  
Location Plan  
South Boston Interceptor  
with Overflow Points

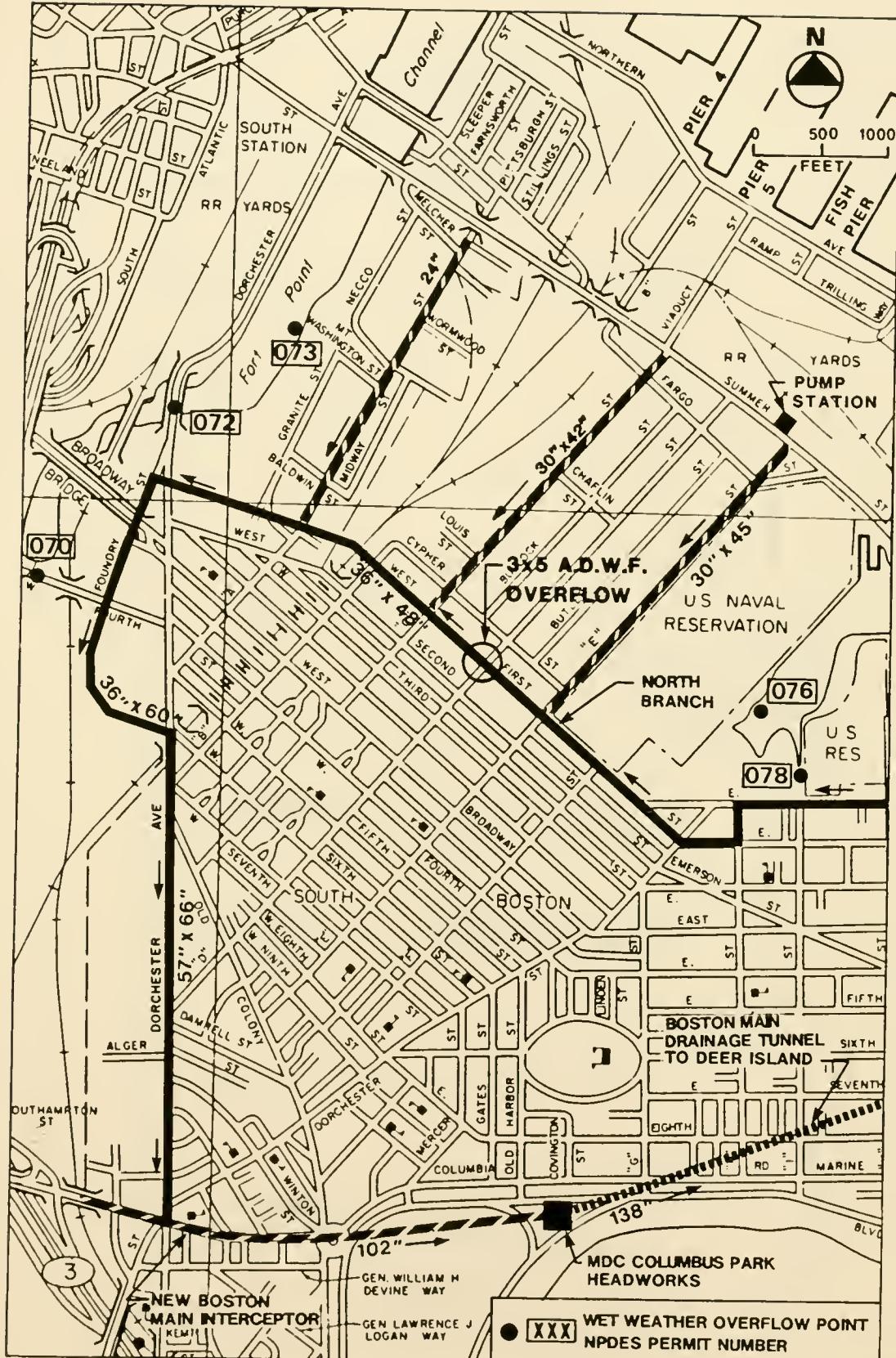
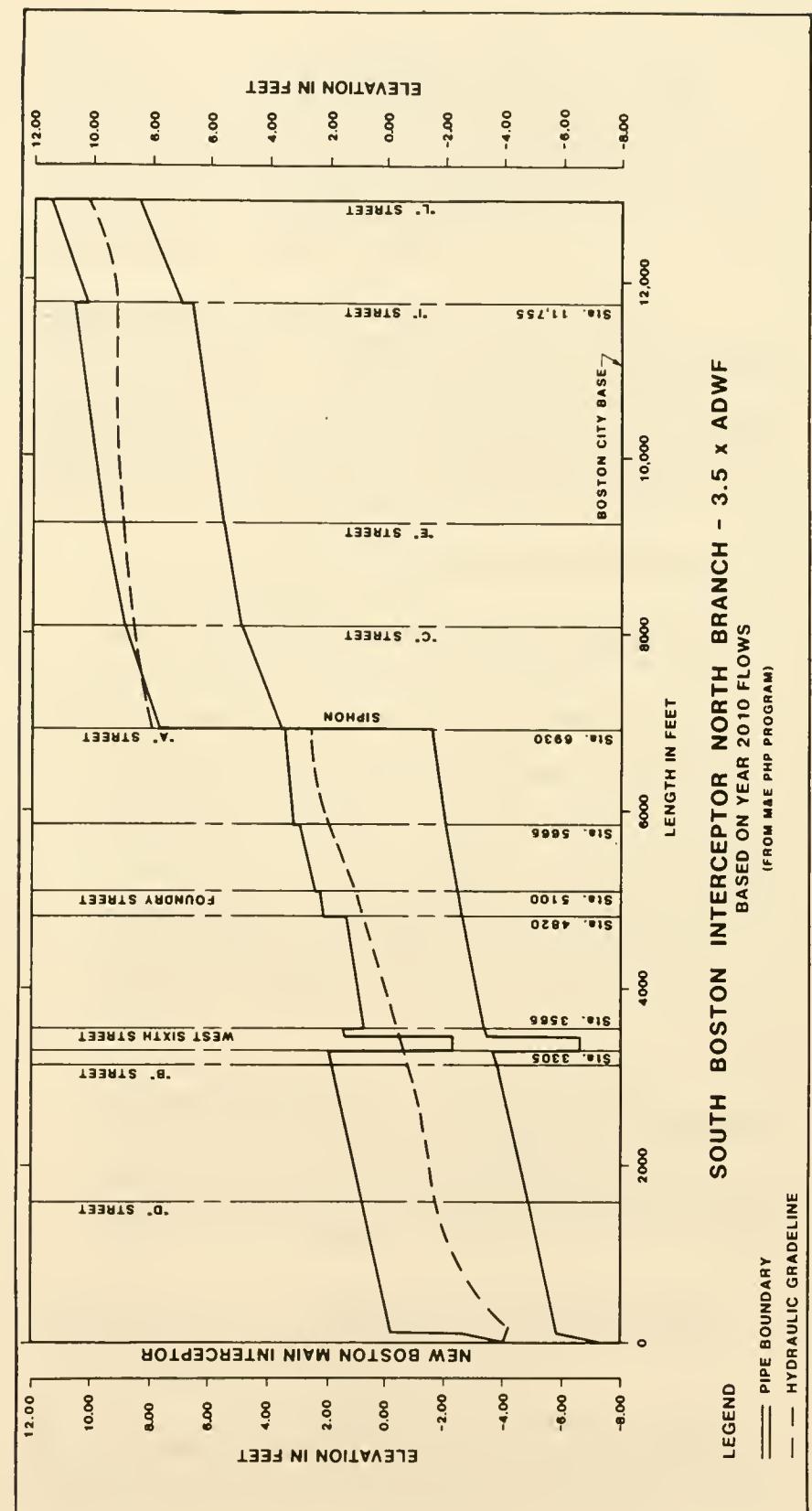




FIGURE VI.2-3  
 South Boston  
 Interceptor  
 North Branch  
 $3.5 \times$  Average  
 Dry Weather  
 Flow





inches to 35 inches in depth). BWSC is planning to begin cleaning the North Branch of the South Boston Interceptor beginning in the spring of 1987. The cleaning of the South Branch of this Interceptor is presently being done. BWSC has established an ongoing inspection and maintenance program for the overflow structures in the Harbor to reduce the inflow of tidal flows and thus reduce the amount of dry weather overflows to the harbor waters.

Boston Harbor Clean-Up. The Massachusetts Water Resources Authority (MWRA) was created in 1984 to assume the water and sewer responsibilities of the Metropolitan District Commission and to address the clean-up of Boston Harbor. The harbor clean-up effort is currently undergoing a comprehensive review and assessment by the MWRA in order to establish a priority of corrective actions. Actions currently being taken include:

- A major maintenance program at the existing Deer Island Treatment Facility.
- Facility operations and management studies to improve systems operations.

Actions currently being evaluated include:

- Construction of secondary wastewater treatment plant at Deer Island.
- Elimination of sludge disposal in Boston Harbor.
- Correction of combined sewage overflows (CSO) into Boston Harbor. The MWRA and BWSC have CSO correction programs whose first priority is the clean-up of beaches and other recreational use areas.
- Implementation of the on-going industrial pretreatment program. The installation of pretreatment facilities and changes in industrial processing will reduce heavy metal and toxic chemical discharges into Boston Harbor from treatment plant effluent and sludge disposal, and from combined sewage overflows.

#### ■ Storm Drainage System

The Fan Pier site currently does not have a storm drainage system. All drainage is by overland flow to Boston Harbor and the Fort Point Channel.

The Pier 4 site has several storm drainage systems. Pier 4 between Northern Avenue and the Pier 4 Restaurant is served by a series of catch basins and drains which discharge directly to Boston Harbor either under the



existing pier structure or through the easterly stone sea wall. The remainder of the site from Pier 4 westerly to approximately the angle point in the Northern Avenue northerly street line (project division line) is drained by a catch basin system with storm drain pipe varying in size from 8 inches to 30 inches. The 30 inch outfall to Boston Harbor is located approximately 300 feet northerly of the angle point in the Northern Avenue northerly street line, and is within the Pier 4 site.

#### ■ Water Supply Systems

Water for domestic use and fire protection is supplied to the project area by the BWSC. Three major water lines serve the Fan Pier and Pier 4 Development sites--two low service mains for domestic water supply and a high service main for fire protection. All three systems are located in Northern Avenue (See Figure VI.2-4).

The low service distribution line that supplies domestic water to the project area is a 12-inch main in Northern Avenue. The distribution line is supplied by a 30-inch low service transmission main also located in Northern Avenue. The 12-inch low service distribution line increases to a 16-inch low service distribution main near Pier 5, and provides the domestic and fire water supply to existing commercial and light industrial properties all along Northern Avenue from the Fort Point Channel to the Boston Marine Industrial Park. The distribution main also reduces to 8 inches in Sleeper Street to a point approximately 350 feet south of Northern Avenue where it increases to 12 inches toward Congress Street. The low service water main system which serves this area of South Boston is shown on Figure VI.2-5.

The low service system which provides domestic supply consists of a 12-inch cast iron pipe installed around 1909 and a 30-inch cast iron pipe transmission main also installed around 1909, but cleaned and cement lined in 1971. These two mains are cross-connected at various points in the system with two cross-connections in the vicinity of the Fan Pier and Pier 4 sites. The 30-inch transmission main should be in good condition as it was cleaned and cement lined in 1971. On the other hand, the 12-inch main and the cross-connections to the 30-inch transmission main could be in deteriorated condition from possible tuberculation over the 75 to 80 years they have been in service.

BWSC water system maps indicate the existence of a series of 6-inch water mains running along the perimeters of the Fan Pier and Pier 4. These lines are connected to the low service water system along Northern



FIGURE VI.2-4  
Location Plan  
Northern Avenue  
Water Supply  
System

**LEGEND**

- 12" LOW SERVICE DISTRIBUTION MAIN
- 16" HIGH SERVICE WATER MAIN
- · · · 30" LOW SERVICE TRANSMISSION MAIN

SCHEMATIC (Not to Scale)

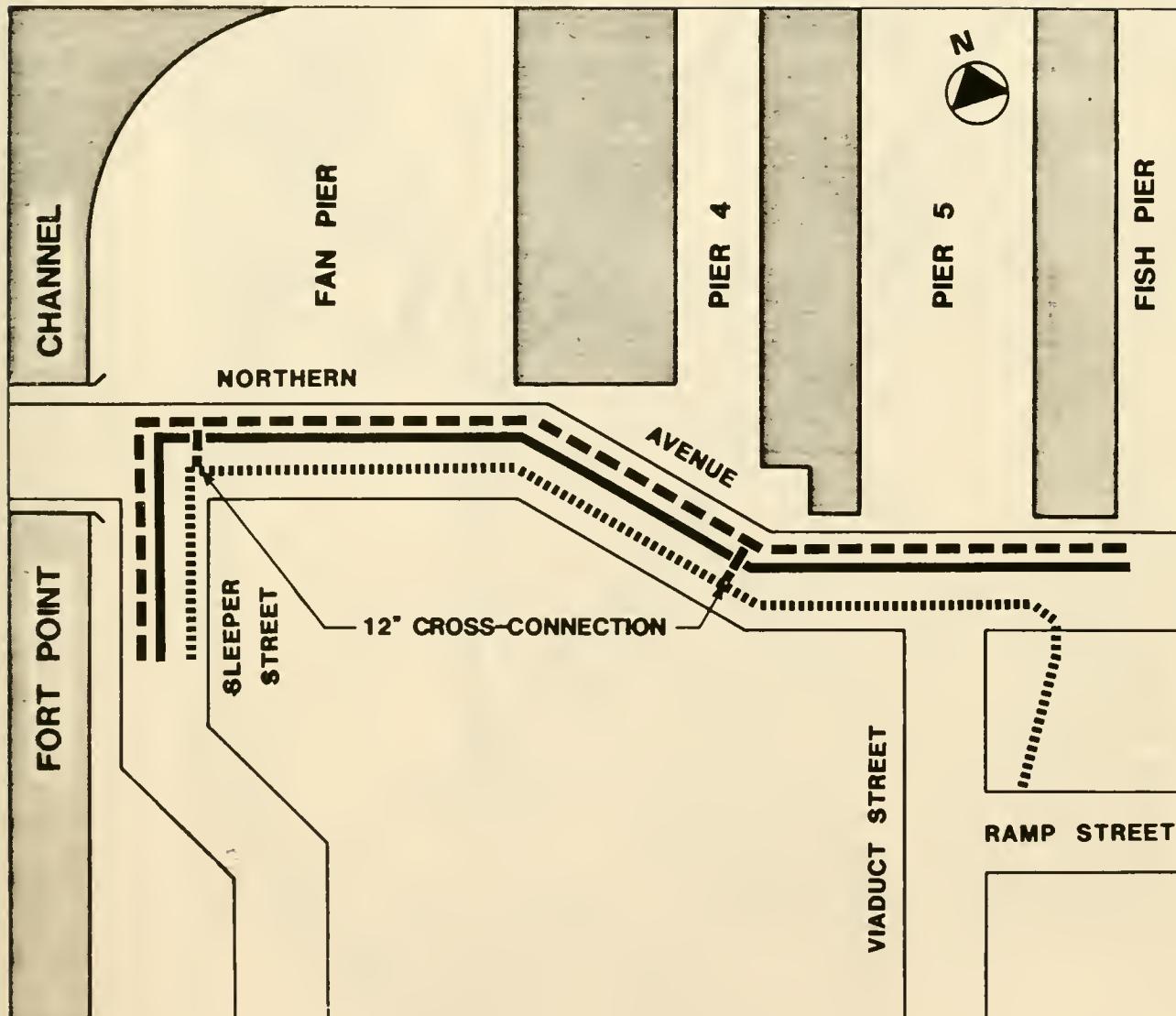
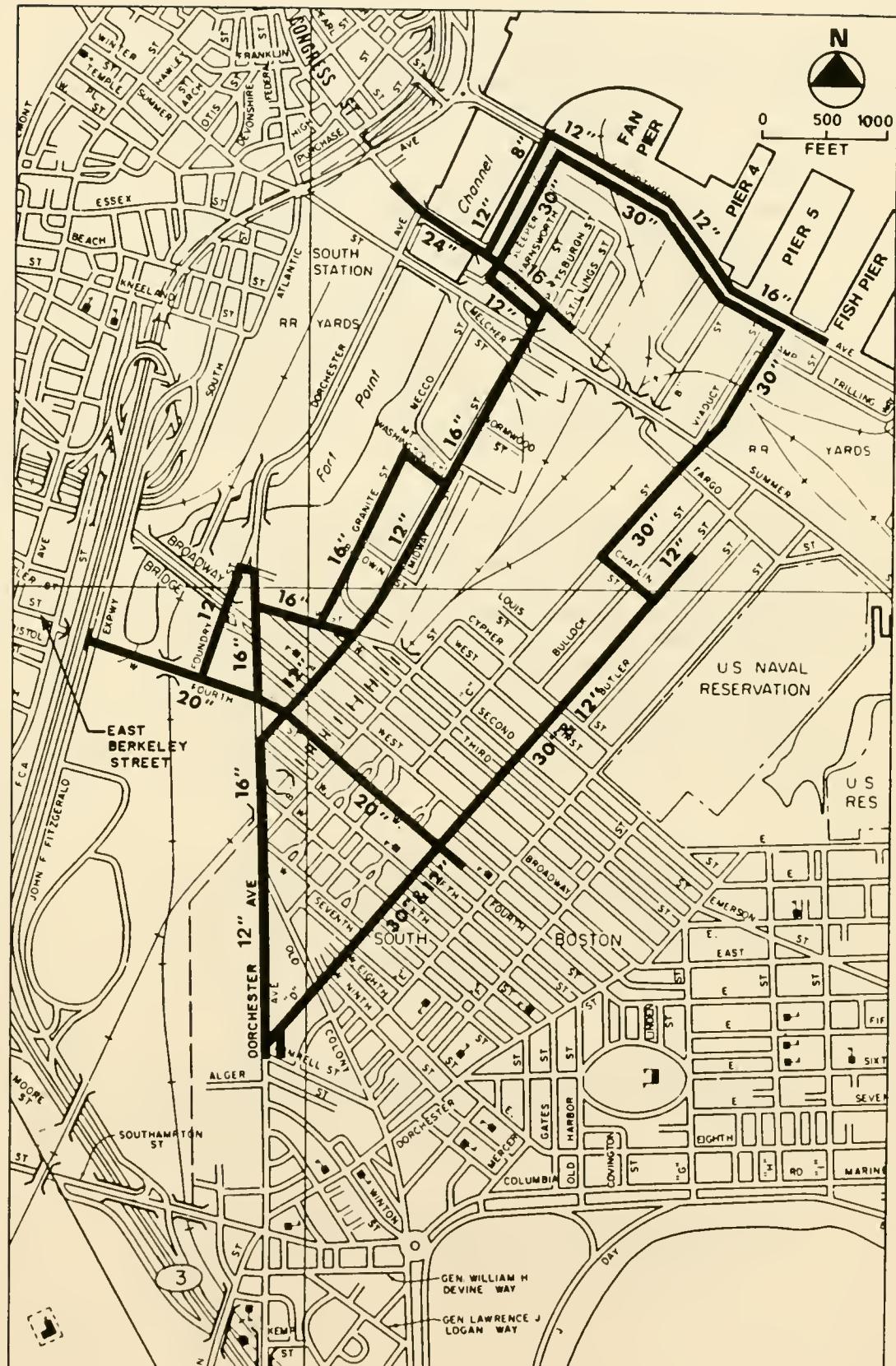




FIGURE VI.2-5  
Location Plan  
Low Service  
Water Supply  
System





Avenue. The system maps indicate the 6-inch pipes serving the Fan Pier and the area across from the Fan Pier (old railroad yard) have been cut off from service by a closed valve in the water main near Pier 4. The age or condition of these 6-inch pipes is not known.

The high service water supply system has a 16-inch main running parallel to the 12-inch and 30-inch low service mains in Northern Avenue. The high service main supplies fire hydrants along Viaduct Street, fire protection to properties along Northern Avenue and domestic water to the Boston Fish Pier. The 16-inch high service main in the area was installed around 1931. In 1983, BWSC replaced an 8-inch high service main in a portion of Sleeper Street with 16-inch pipe to make the development area completely looped with a 16-inch main. The high service water main system which services this area of South Boston is shown on Figure VI.2-6.

#### ■ Electricity

The Boston Edison Company presently has two electric supply systems in Northern Avenue adjacent to the Fan Pier and Pier 4. A duct/manhole system in the northerly half of the roadway was installed many years ago to furnish electrical power for the warehousing facilities of the New York, New Haven and Hartford Railroad located on both sides of Northern Avenue, and also to furnish electricity for the street lighting system. A 115 KV transmission system in the center of the roadway was installed in the mid-1970's to carry power from BECO's 'L' street generating plant to their substation on Atlantic Avenue.

#### ■ Gas System

There is an existing Boston Gas Company 12-inch intermediate pressure gas main in the northerly half of the Northern Avenue roadway adjacent to the development sites, which was installed in 1924. Anthony's Pier 4 Restaurant is the only major user along Northern Avenue between "B" Street and Sleeper Street.

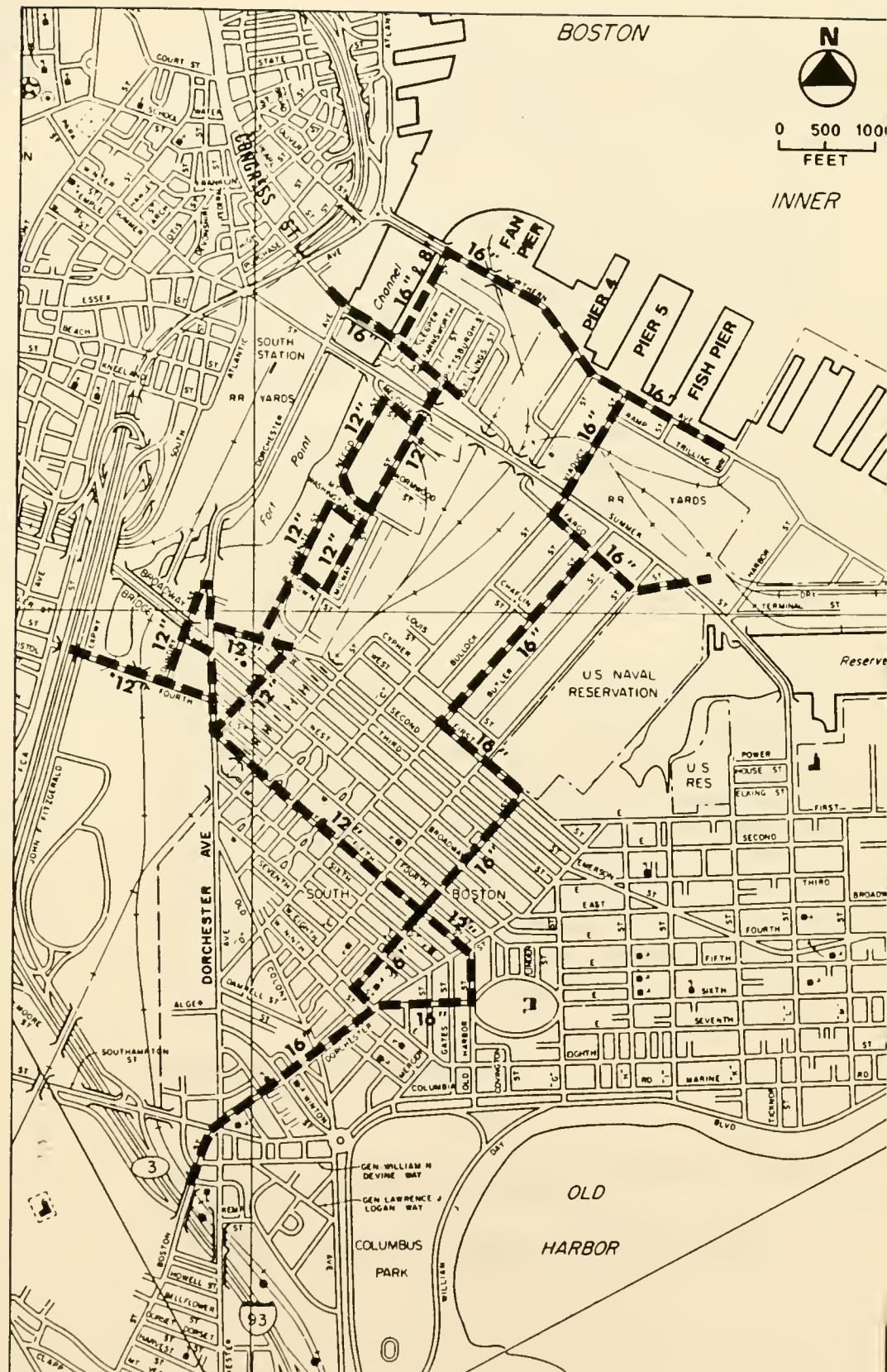
#### ■ Telecommunications System

The New England Telephone Company does not have an underground duct/manhole system in Northern Avenue adjacent to the development sites; all service west of "B" Street to the Sleeper Street area is furnished by overhead wires on utility poles.

The Boston Fire Alarm Division of the Boston Fire Department has existing facilities in Northern Avenue adjacent to the development sites. The Pier 4 Restaurant presently has a fire alarm system in operation.



FIGURE VI.2-6  
Location Plan  
High Service  
Water Supply  
System





FORT POINT CHANNEL/  
COMMONWEALTH FLATS AREA  
LONG-TERM  
INFRASTRUCTURE  
MASTER PLAN

At the request of the Secretary of Environmental Affairs, the proponents have undertaken an investigation of the long-term area-wide infrastructure requirements for the Fort Point Channel/Commonwealth Flats area. For the purposes of this effort the specific study area was defined as that area of South Boston bounded on the North by Boston Harbor on the east by E.D.I.C., on the south by Summer Street and on the west by the Fort Point Channel. This planning effort has involved extensive consultation with public agencies and utility providers as well as with public and private development entities in the area. The result of this infrastructure planning process is presented in the following pages and represents a general consensus of the numerous concerned public and private entities.

To allow the development of utility distribution networks for the Fort Point Channel/Commonwealth Flats area of South Boston several basic planning assumptions have been made. Perhaps the two most important assumptions (1) the future configuration of roadways, since roadways help define development sites and provide rights-of-way for utilities; and (2) the total level of development that the infrastructure systems will have to serve in their design life.

The roadway network shown on Figure VI.2-7 was developed in consultation with the Executive Office of Transportation and Construction, Massport, the Boston Redevelopment Authority and other of the public and private agencies involved in planning and development in the area. Clearly this network is not intended to represent a final system design to be built: there are points of disagreement among and within all the parties involved as to the detailed alignments and design of the roadway system. Nevertheless, this roadway plan presents a reasonably complete and accurate summary of the concepts being developed by the various parties.

The new and/or reconstructed roadways shown on Figure VI.2-7 are to be constructed by the following agencies:

Commonwealth of Massachusetts

- Seaport Access Road/I-90
- Seaport Access Road (Entrance) - Congress Street to Relocated Northern Avenue
- Seaport Access Road (Exit) - Congress Street to Relocated Northern Avenue



- Relocated Northern Avenue - "B" Street to Atlantic Avenue
- Sleeper Street - Relocated Northern Avenue to Existing Northern Avenue

City of Boston

- Sleeper Street - Congress Street to Relocated Northern Avenue
- Farnsworth Street - Congress Street to Relocated Northern Avenue
- Pittsburgh Street - Congress Street to Existing Northern Avenue
- Seaport Access Road (Entrance) - Relocated Northern Avenue to Existing Northern Avenue
- B Street - Congress Street to Relocated Northern Avenue
- Congress Street - Stillings Street to "B" Street

Fan Pier and Pier 4 Developments

- All on site roadways north of Existing Northern Avenue

Commonwealth Flats/World Trade Center Developments

- D Street Extension
- Viaduct Street - Adjacent
- Ramp Street - Adjacent
- Congress Street Extension
- Trilling Way

A second basic assumption that has guided the area-wide infrastructure planning is that the systems required to service this area should be adequate to meet the requirements of complete development on all of the available parcels formed by the street network shown. Thus, the systems illustrated in the following pages are located and sized to service the long-term development needs of the study area for the next 25 to 50 years, depending on the rate of build out. This analysis looks well beyond the completion year (1995) and the design requirements of the Fan Pier and Pier 4 projects. The infrastructure systems have also been planned, as requested by the Secretary of Environmental Affairs, to enhance existing service to adjacent areas of the City.



## ■ Sanitary Sewer System

There are three major collection trunk lines that service the Commonwealth Flats/Fort Point Channel sections of Boston: the 24-inch diameter line in "A" Street, a 30"x42" brick sewer in "C" Street and a 30"x45" brick sewer in "E" Street. All three of these lines presently function as combined sewers. This means that they carry wet weather storm drainage flows as well as dry weather sanitary sewage flows. The sanitary sewer collection system proposed in Figure VI.2-8 will be a separate dry weather, sanitary sewage collection system only within the limits of the study area. This sewer collection system would continue to discharge into a combined system south of Summer Street but will be constructed in a manner that will allow incorporation into a separate system in this area in the future.

There are three sewer system branches proposed to service this area. One would carry flows to the existing sewer line in "A" Street and the other two would discharge to the existing line in "E" Street by way of the Summer Street pump station.

It is BWSC's policy not to fund improvements or extensions to their systems required to meet the demands of specific new developments. Rather, it is BWSC's policy that any such costs associated with this type of work be borne by the entity requiring the work to be done. BWSC also requires that all work be done to its standards and that they retain approval over the design and construction of all work. BWSC will maintain and operate the system after it is in place.

The following scenario is proposed for implementation of the systems shown on Figure VI.2-8. The existing combined sewer servicing the Sleeper Street, Farnsworth Street, Pittsburgh Street, Stilling Street and Congress Street area will be retained and will become a separate sanitary system upon the completion of the reconstruction of these roadways, assuming a new storm drain system will be installed during that reconstruction. The extension of this system to service the needs of the adjacent development areas will be accomplished by the developers of these parcels. This system must be constructed during the construction/re-construction of roadways in the area, and it is assumed that the affected developers will be required to make early commitments of funds in order to assure that the required service is available when their developments are completed.

The construction of the system proposed to service the Fan Pier and Pier 4 Developments will be undertaken by the proponents and possibly other development entities to assure availability of service upon completion of the sites. This system will be built in coordination with



the construction of adjacent developments and the new area roadway system.

The system proposed to service the Commonwealth Flats/World Trade Center area incorporates the use of the existing sewer recently completed and the new system required to meet the needs of Fan Pier and Pier 4. This system will be constructed in coordination with the new roadways proposed for the area.

Several alternative configurations for the systems shown on Figure VI.2-8 are under study to assure that variations in final roadway configurations and construction scheduling will not affect the ability of the systems to service the proposed projects and adjacent areas of South Boston. These efforts will continue, in close coordination with BWSC, other city and state agencies and other area developers to design and construct systems which will meet the needs of the area.

#### ■ Storm Drainage System

The storm drainage system shown on Figure VI.2-9 has been developed to be constructed in conjunction with the reconstruction of the area roadway network. It is strongly recommended that the roadway drainage systems be adequately sized to accommodate not only the runoff from the streets but also from the adjacent development parcels. Given the location of the Fan Pier and Pier 4 Developments all site drainage will flow to the Inner Harbor independent of the systems built for roadway drainage. Most of the other parcels in the area must depend on the creation of new drain systems in the roadways that will be adequate to meet the present and future needs of the area.

The city and state agencies responsible for the design guidelines for these roadways are encouraged to assure that these systems are adequate. Much of the storm drainage, in the area where systems exist, is presently collected in combined sewers and contributes to overloading of the existing sewage treatment facilities and adding to the pollution of Boston Harbor.

As in the case of the sanitary sewer, several alternative system configurations are being studied based on various roadway and/or scheduling modifications that may occur before implementation of the systems. The size of the new systems recently constructed in the Commonwealth Flats/World Trade Center area allow this flexibility, as does the existing line in Congress Street. The system shown on Figure VI.2-9 assumes the construction of Relocated Northern Avenue before the adjacent city street improvements and the adequate sizing of its drainage system to accommodate not only



Northern Avenue drainage and the adjacent parcel drainage, but also the runoff from the adjacent street drainage systems as well. This minimizes the length of pipe required in the streets as well as the number of outfalls that will be needed, and simplifies any treatment facilities that may be proposed at the outfalls to the Harbor.

The proponents of the Fan Pier and Pier 4 Projects will continue to work with city and state agencies and area developers to assure that planning for the storm drainage systems meets the long-term requirements of the area.

■ Low Service Water System

The existing low service water transmission system in the study area has adequate capacity to meet the long-term development service requirements. The system modifications as shown on Figure VI.2-10 are required to extend service lines into new areas of development and to clear future development parcels. The BWSC is presently investigating the feasibility of relocating its Congress Street transmission line from Downtown to the proposed Northern Avenue bridge. This would improve service by increasing the size of the transmission line and by placing it on a more reliable and more easily maintained facility. The modifications to the system will be made during the proposed roadway construction/reconstruction planned for the area. A street hydrant system will be required and will be supplied by the low service water system. The design and implementation of this system will be coordinated with the Boston Fire Department by the agencies and/or developers of each segment of the overall system as alignments and limits of responsibility become more completely defined. As in the case of the High Service Water system modifications, the adjacent landowners will be expected to contribute to the effort required to service their parcels.

■ High Service Water System

The study area is serviced by two types of water supply systems: (1) High Service Water which is used for internal building fire protection systems, and (2) Low Service Water which is used for domestic water. Both systems are maintained and operated by BWSC.

The High Service Water supply system servicing this area is shown on Figure VI.2-6, with water able to enter the area from lines in Congress Street, "A" Street, Viaduct Street and Northern Avenue. This existing distribution system must be extended as shown on Figure VI.2-11 to provide for the long-term development of the area. The installation of the system shown will be coordinated with the roadway construction proposed for the area. In



addition to extending the system into the proposed areas of development, the existing lines in Sleeper, Farnsworth and Pittsburgh Streets will be upgraded to assure adequate service in the area. This work, as in the case of the sanitary sewage system, must be funded by the adjacent developers except in areas where relocation of existing lines are required to do roadway construction.

BWSC is investigating the feasibility of extending a new supply line into the area over the proposed Northern Avenue bridge. This line would either replace or supplement the existing line crossing Fort Point Channel at Congress Street.

#### ■ Electric System

The Fort Point Channel/Commonwealth Flats section of South Boston, is presently serviced by Boston Edison Company (BECO) by way of underground conduit and manhole systems. These systems are fed from two directions: from a substation on Atlantic Avenue by way of the Congress Street Bridge and from a substation at the BECO "L" Street generating facility by way of Summer Street. The existing systems must be upgraded to meet the requirements of the future level of development anticipated in the area.

The conceptual distribution system shown on Figure VI.2-12 indicates the scope of the BECO system necessary to meet the projected energy requirements upon long-term development of the area. This system requires the construction of a substation within the region to enable BECO to supply power through a 'network' system similar to the systems now used in the Downtown area. The location shown for the substation is for conceptual purposes only, to identify that a substation is required and to allow the development of a suitable distribution network. The final location of the station will depend on the availability of a land parcel appropriate for this use. BECO personnel are presently investigating several possible sites in the Summer Street corridor for this purpose.

The time frame required for the development and implementation of a distribution network of this size and complexity requires that a temporary system be developed to service the initial requirements of Fan Pier and Pier 4. It is anticipated that this temporary system will be built to conform to the final needs of the overall system, but that it will be fed from BECO's existing substation on Atlantic Avenue. This portion of the system will later be switched over to the new substation when it comes on line.



The developers of Fan Pier and Pier 4 will continue to work with BECO, public agencies and other area developers for implementation of both the temporary and final service systems.

The final electric distribution system being planned by BECO will have adequate capacity for extension into the adjacent areas of South Boston to supplement the existing system. This system will also relieve some of the load now placed on existing systems and should improve service delivery to adjacent areas of Boston.

#### ■ Gas System

Boston Gas Company presently services this area of South Boston by way of two separate systems: a low pressure gas system and an intermediate pressure gas system. The low pressure system is theoretically used to meet smaller, lower volume gas loads and the intermediate pressure system is intended to supply higher volume requirements. The conceptual distribution system shown on Figure VI.2-13 extends the intermediate gas system to supply the needs of both existing and future development in the area and releases the capacity of the low pressure line now taken up by users in this area to supplement existing service in adjacent areas of the city.

Boston Gas Company recently upgraded a portion of its system in front of the World Trade Center in anticipation of the construction of the required distribution network.

The Fan Pier and Pier 4 developers will continue to work with Boston Gas Company to coordinate the extension of the gas system to service their developments and to assure that portions of the system built to service their projects allow for the implementation of the long-term distribution system.

#### ■ Telecommunications System

New England Telephone (NET), in response to the existing levels of development and in anticipation of the future development of the area, is upgrading its existing facilities. This effort includes the construction of a switching substation in its existing facility on Congress Street and the construction of conduit and manhole facilities in the local roadways. These systems are adequate, if extended with the construction of the remainder of the local street network, to meet the long-term development requirements (see Figure VI.2-14). This distribution system is planned to be utilized for emergency communication systems by both the Boston Fire Department and the Boston Police Department.

The developers will continue to work with NET to assure that the portion of the system required to meet the



service needs of the Fan Pier and Pier 4 Developments will be sized and detailed to be incorporated into the final distribution network for the area. The network planned and now being built has the capacity to be extended into adjacent areas of the city and will allow the upgrading of existing telecommunications service.

## ■ Summary

The viability and desirability of the conceptual utility systems shown on these plans has been generally agreed upon by the utility suppliers and by the major future users in the Fort Point Channel/Commonwealth Flats area. Due to the number of public agencies, utilities and private interests involved with design and/or construction of portions of the area there is a great deal of planning and coordination of work still to be done to assure acceptable design and construction of the system is achieved. Funding for the work required will also be coming from many public and private sources. The utility companies will be performing the work on their own systems necessary to meet the future load requirements but will need assignments of new rights-of-way in existing and proposed streets. The utilities will be expecting various levels of contributions to the cost of their systems in a fashion similar to their Downtown policies. The construction of water and sewer systems will be done by private developers as well as by public agencies and must be coordinated to occur as part of the proposed roadway construction. All of the interested parties must continue to be actively involved in this coordination effort to assure that their interests and the interests of the area are addressed adequately at each stage of implementation.



FIGURE VI.2-7  
 Fort Point Channel/  
 Commonwealth Flats  
 Long-Term Development  
 Roadway Network

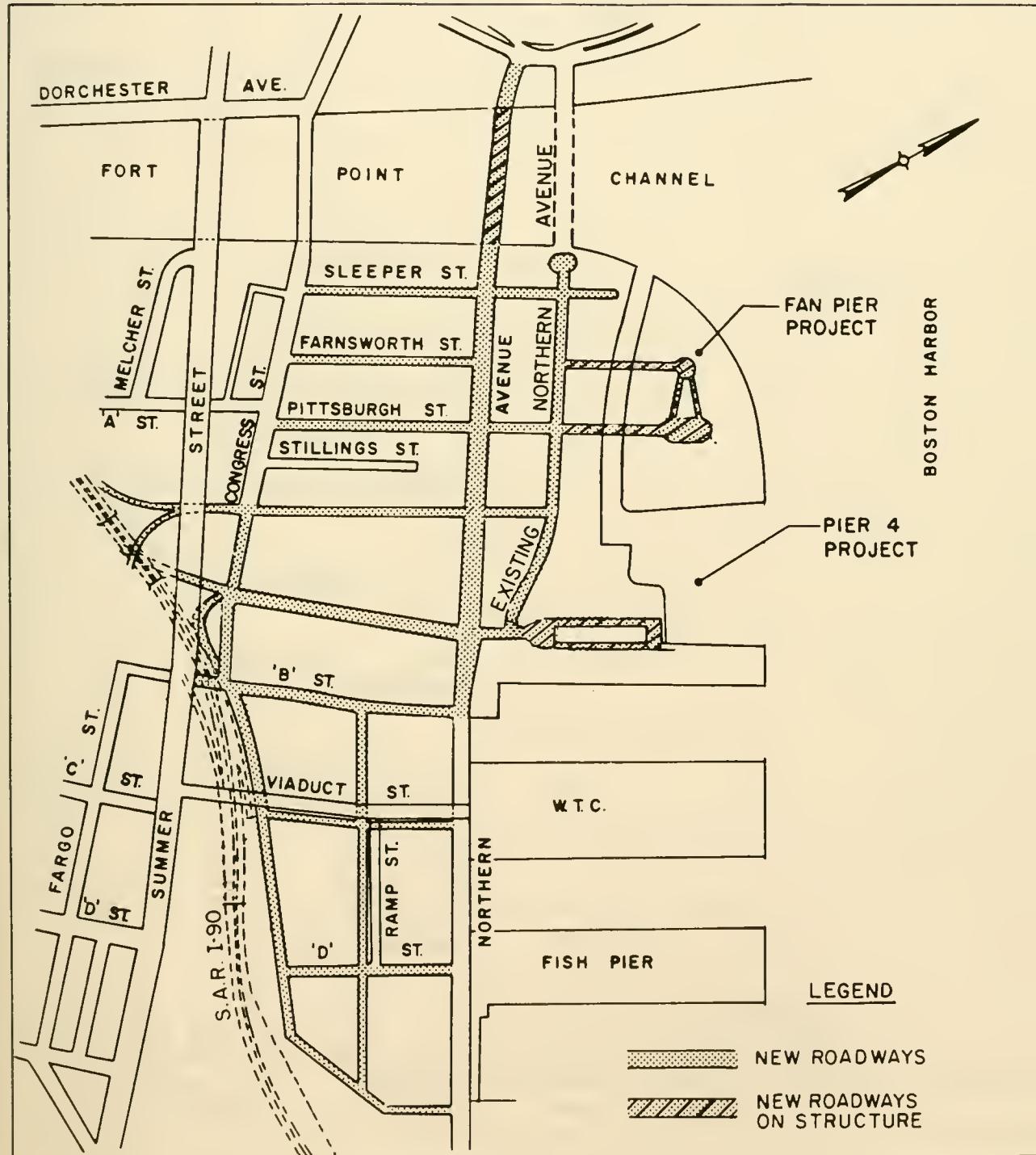




FIGURE VI.2-8  
 Fort Point Channel/  
 Commonwealth Flats  
 Long-Term Development  
 Sanitary Sewer System

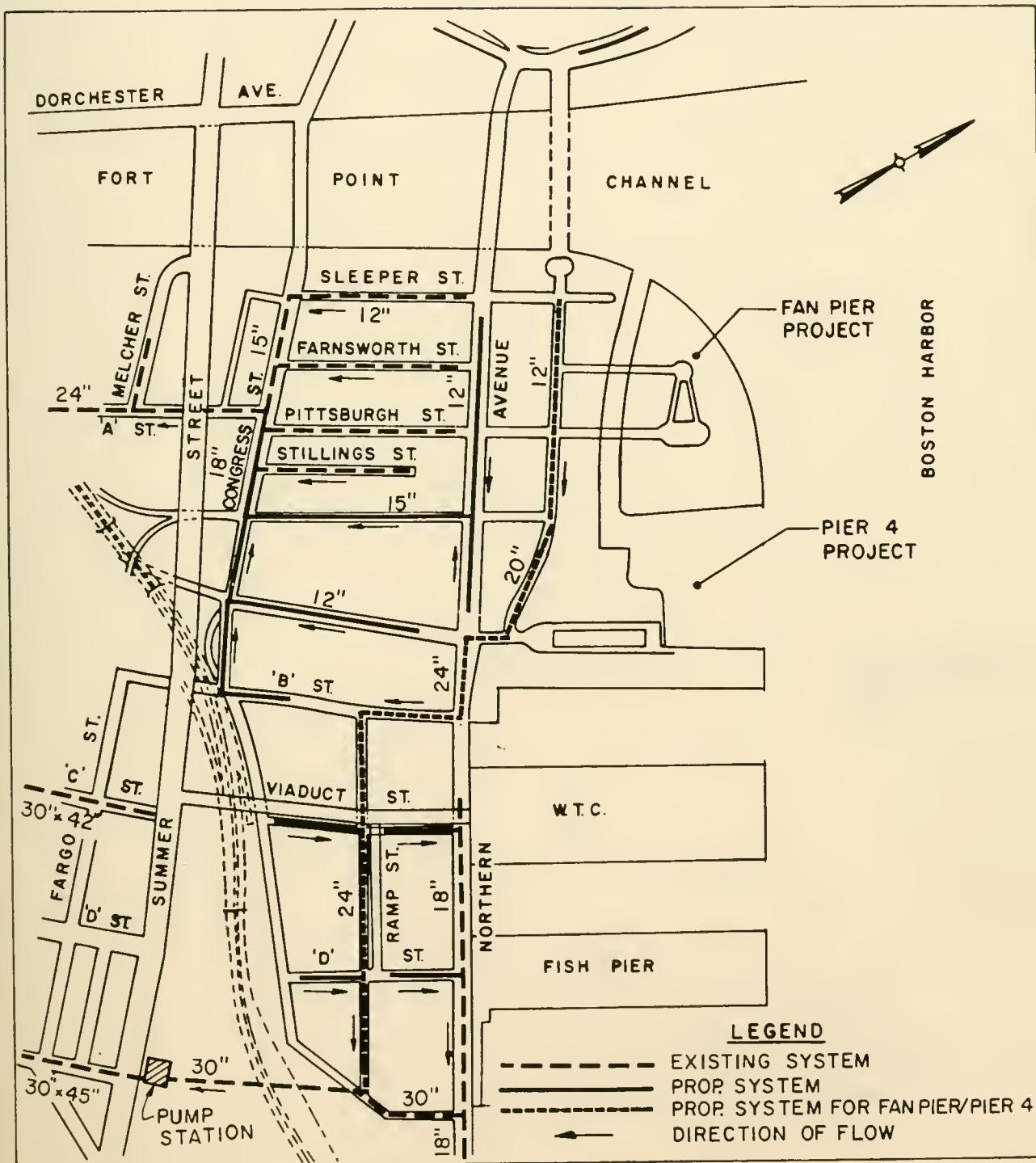
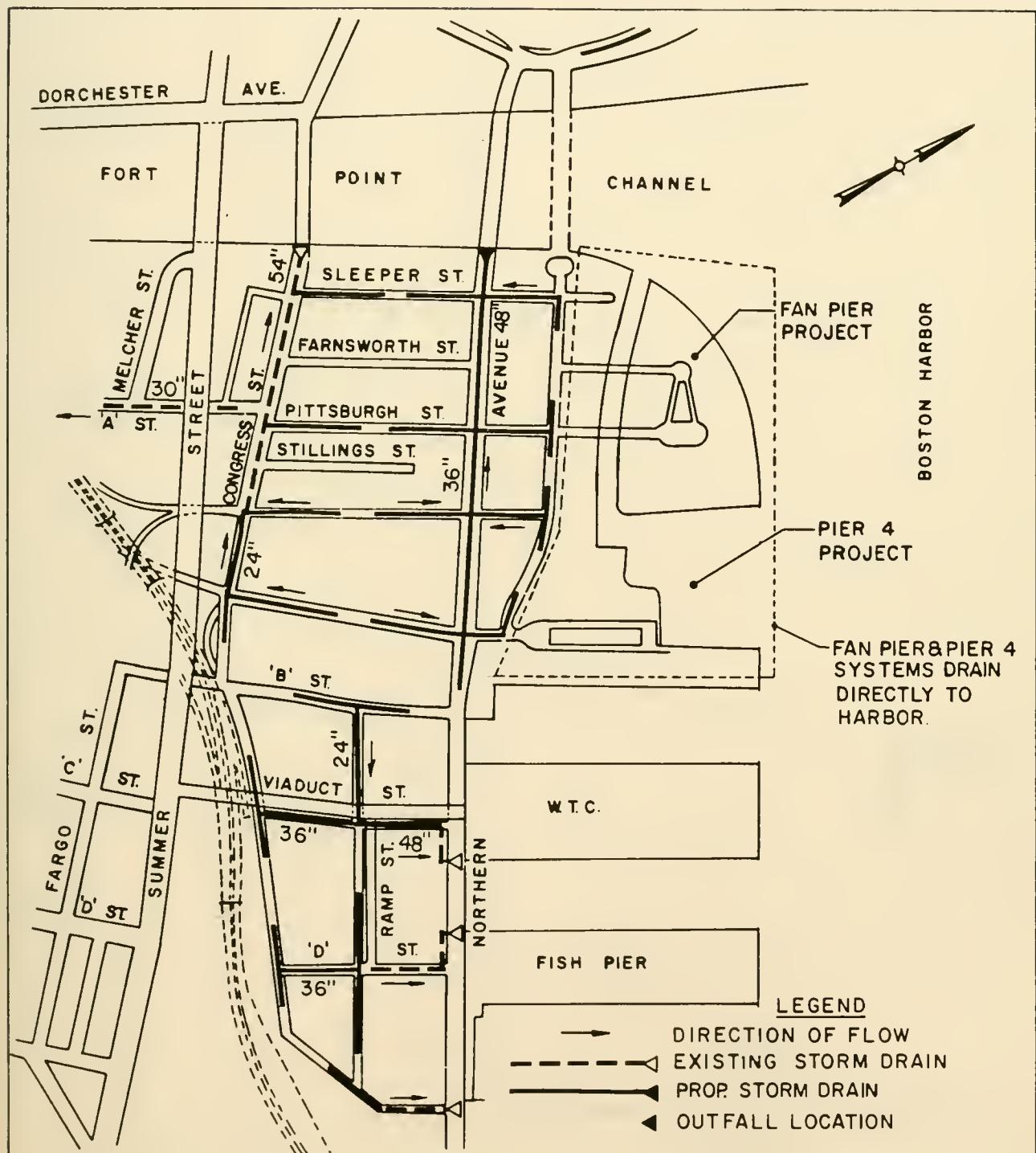


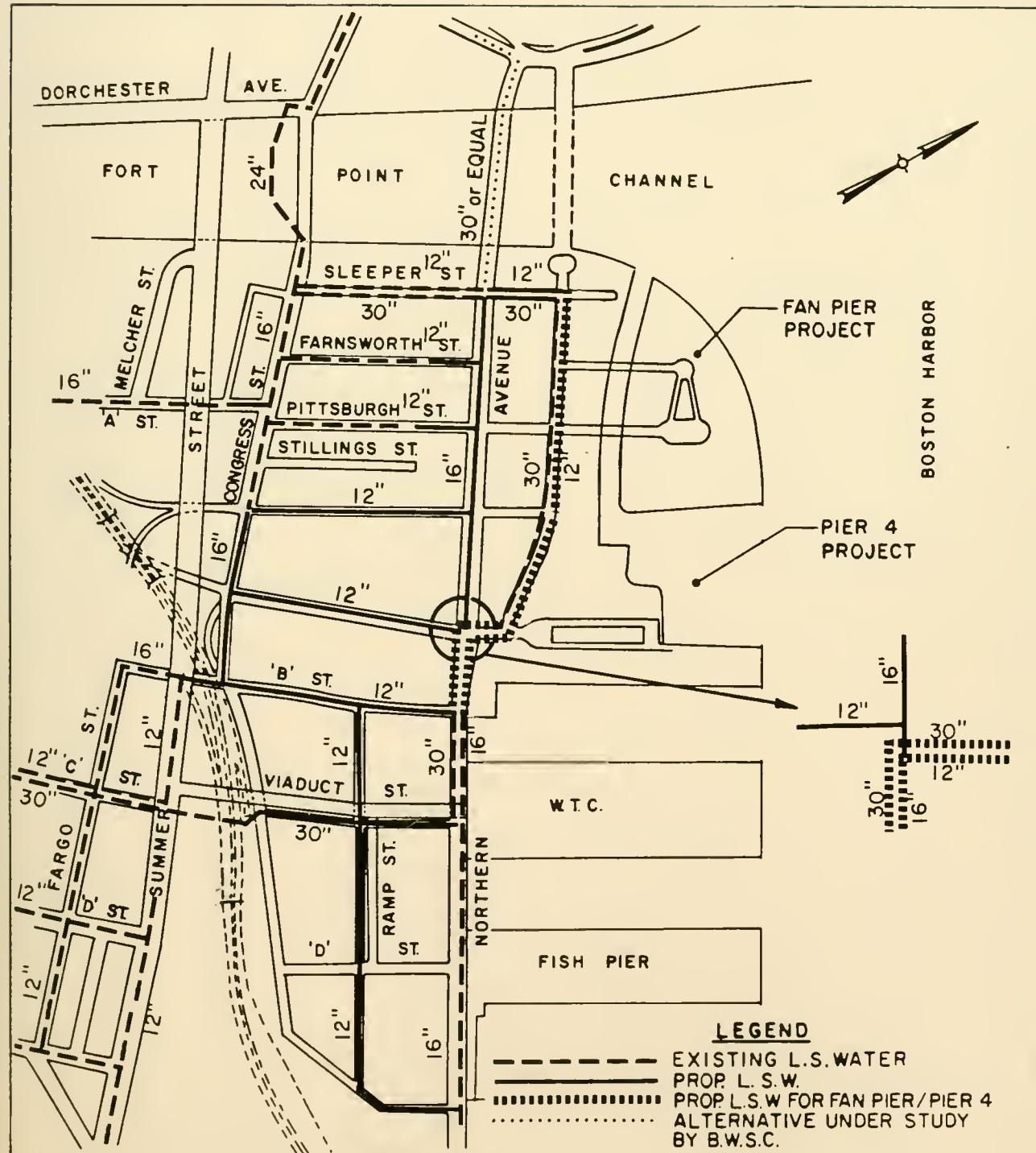


FIGURE VI.2-9  
 Fort Point Channel/  
 Commonwealth Flats  
 Long-Term Development  
 Storm Drain System





**FIGURE VI.2-10**  
**Fort Point Channel/**  
**Commonwealth Flats**  
**Long-Term Development**  
**Low Service Water**  
**System**





**FIGURE VI.2-11**  
**Fort Point Channel/**  
**Commonwealth Flats**  
**Long-Term Development**  
**High Service Water**  
**System**

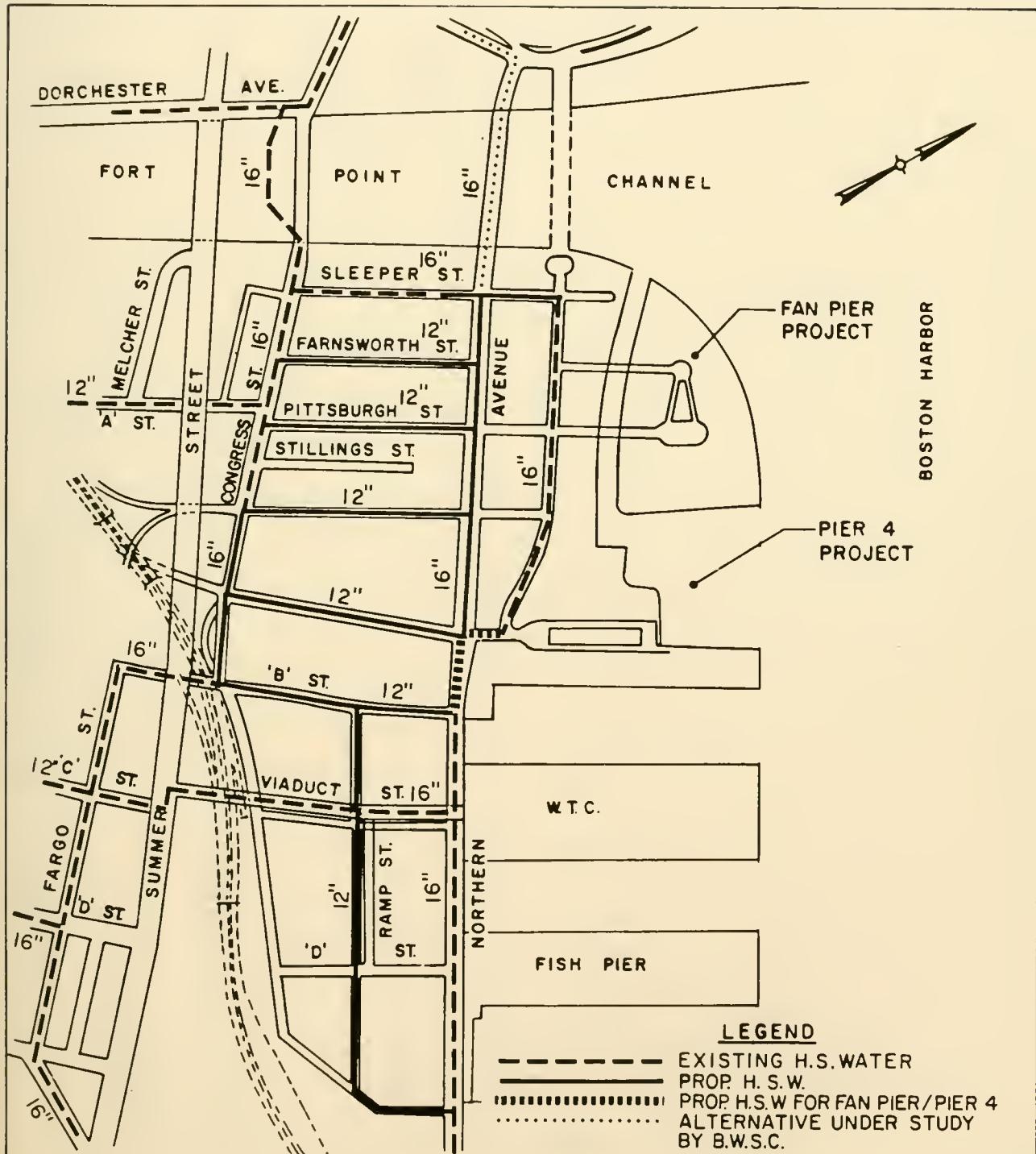
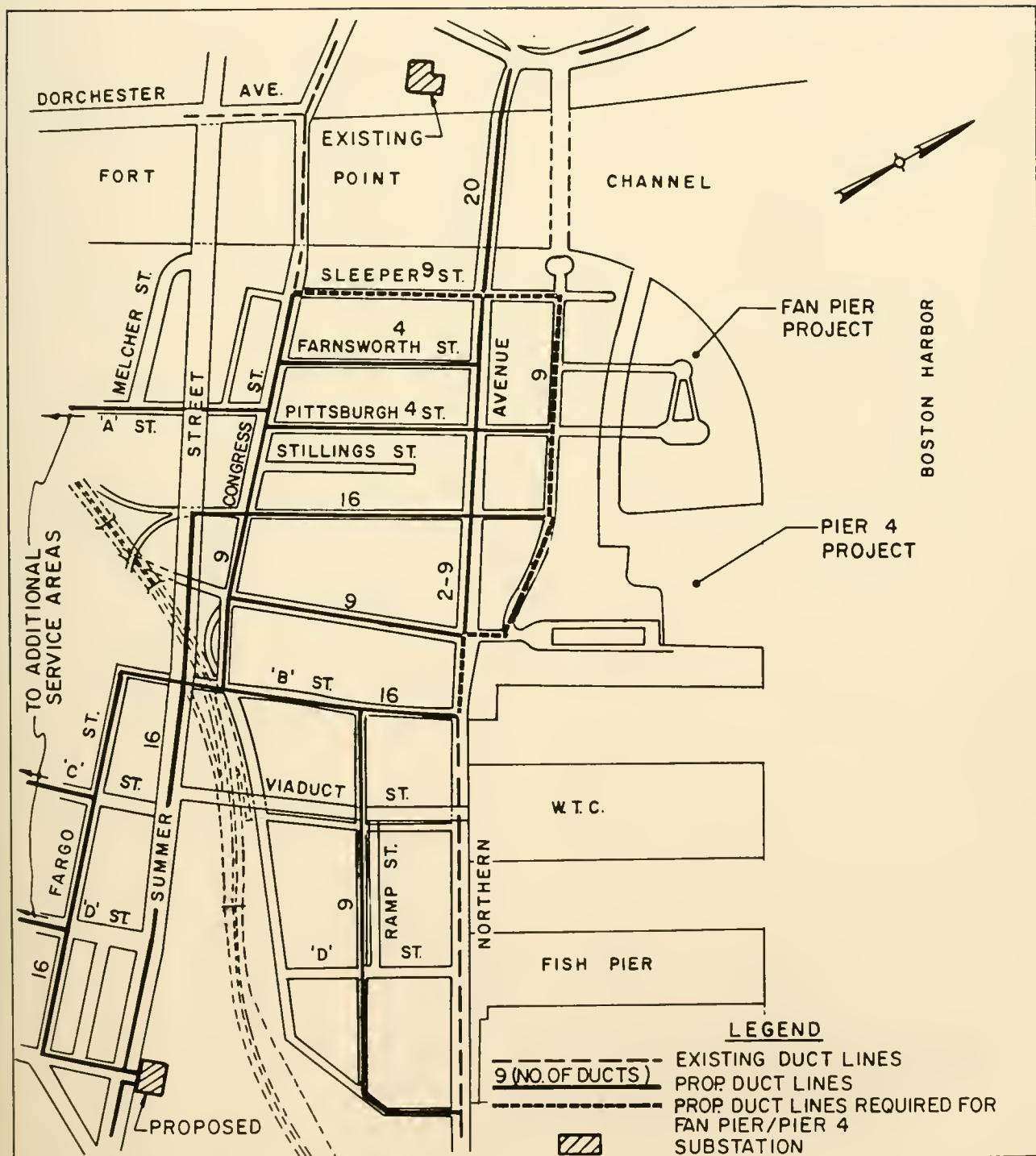


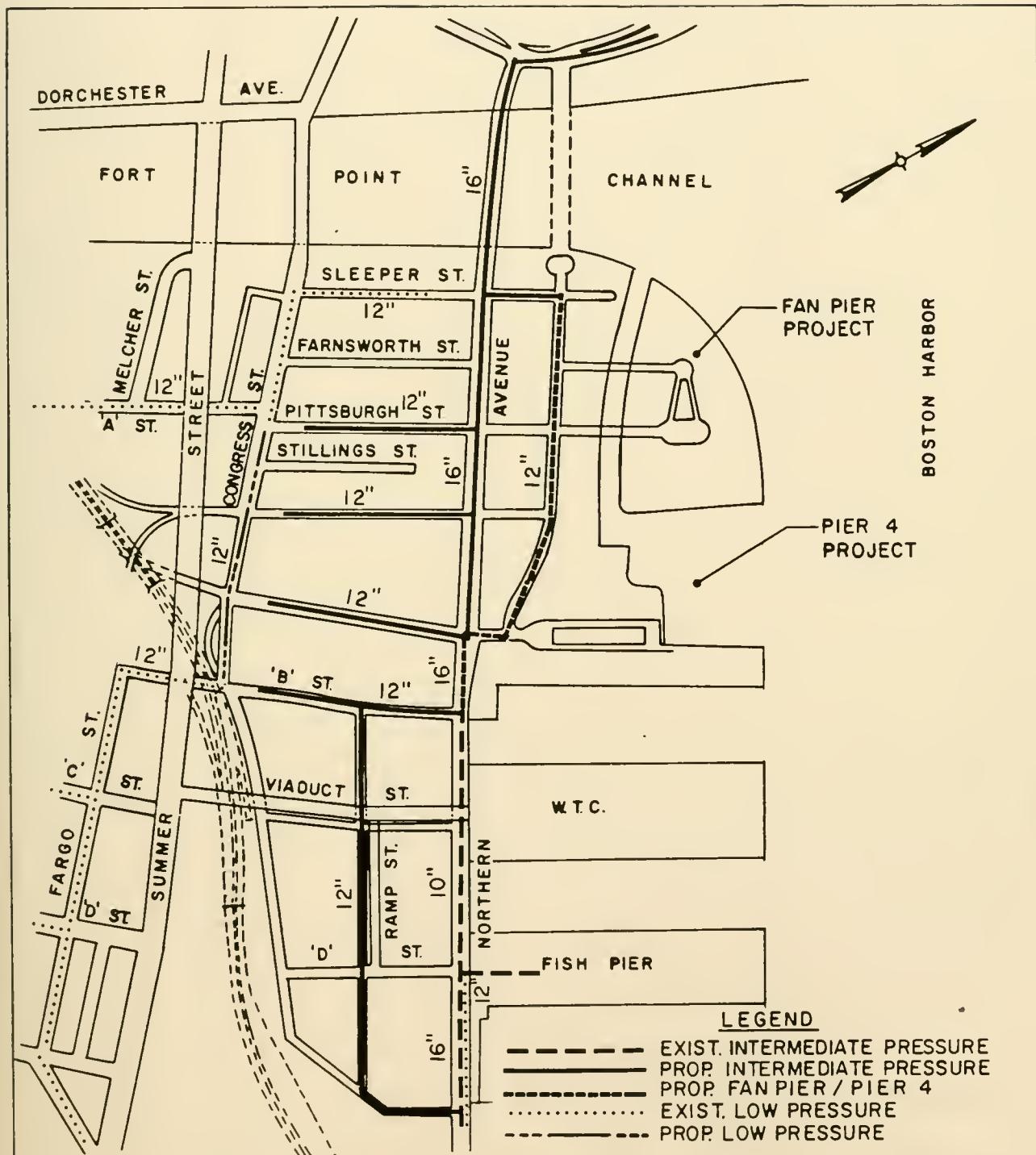


FIGURE VI.2-12  
 Fort Point Channel/  
 Commonwealth Flats  
 Long-Term Development  
 Electric System



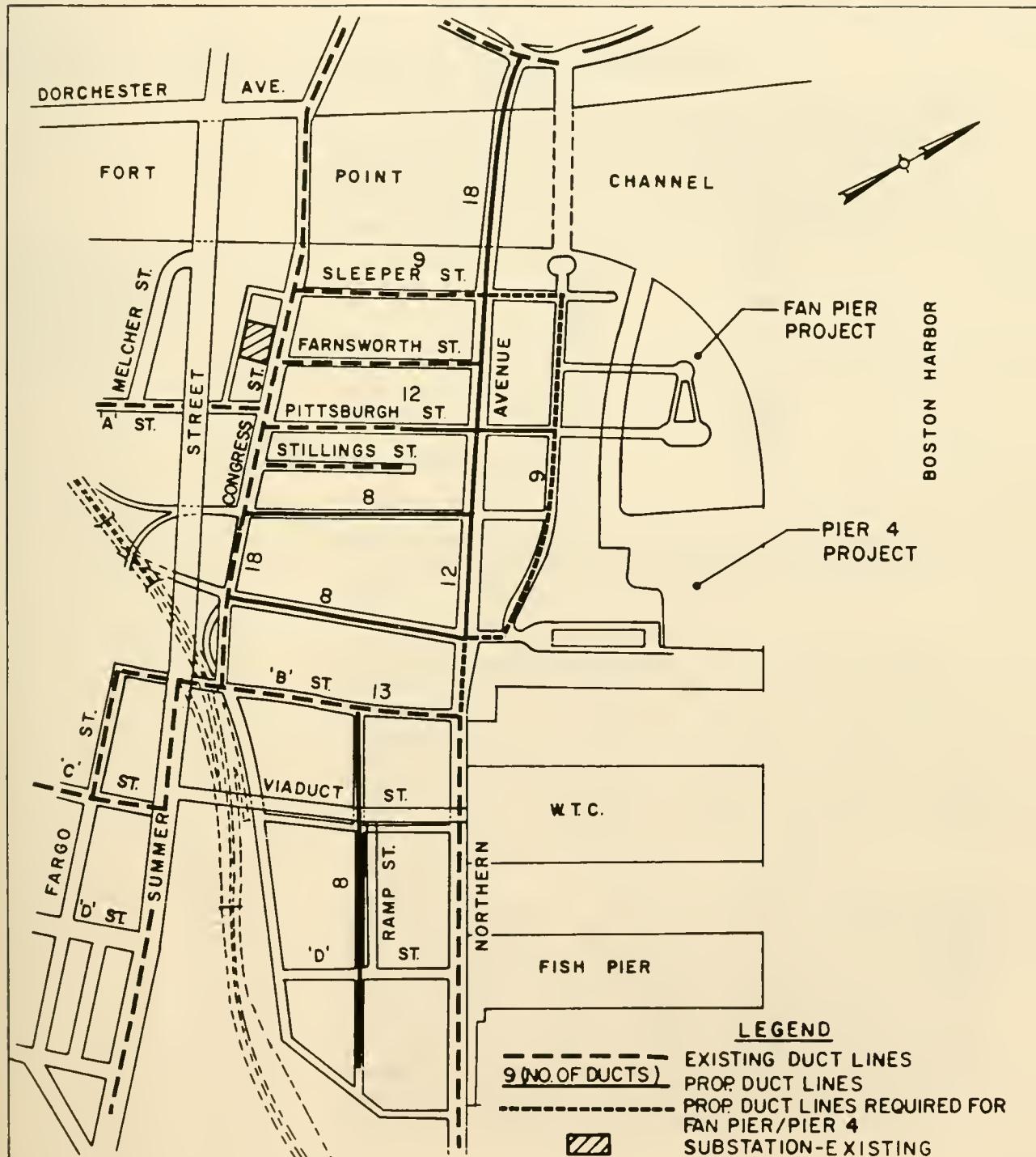


**FIGURE VI.2-13**  
**Fort Point Channel/**  
**Commonwealth Flats**  
**Long-Term Development**  
**Gas System**





**FIGURE VI.2-14**  
**Fort Point Channel/**  
**Commonwealth Flats**  
**Long-Term Development**  
**Telecommunications**  
**System**





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**PROBABLE PROJECT IMPACTS**

The Fan Pier and Pier 4 Developments will create increased demands on all of the utility systems in the project area. In addition, the proposed projects will require the relocation of several existing systems in Existing Northern Avenue as construction occurs. Estimates of the impacts of the developments on the existing infrastructure systems are discussed below:

**■ Sanitary Sewer System****Projects' Wastewater Generation**

It is estimated that the proposed projects generate an average daily quantity of wastewater of 0.79 mgd and a peak wastewater flow of 1.45 mgd (See Table VI.2-1). Peaking factors of 3.0 for restaurants, 2.4 for office/retail and 1.5 for residential/hotel categories were assumed for these sites in this analysis.

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Table VI.2-1  
Project Wastewater  
Flow Estimates:  
Fan Pier and Pier 4  
Year 1995

	Average Daily (MGD)	Peak (MGD)
Fan Pier	0.53	0.956
Pier 4	<u>0.26</u>	<u>0.491</u>
Combined Total	0.79	1.447

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These flows are based largely on the Title V standards of the Massachusetts Department of Environmental Quality Engineering Sanitary Code.

Actual flows generated by the Fan Pier and Pier 4 Developments may be somewhat less than the estimates presented in Table VI.2-1. The average daily flows presented here and elsewhere in this Section are based largely on Title V Sewage Flow estimates, which more closely approximate maximum daily flows, rather than average daily quantities. Also, it is anticipated that sewage flow reduction will be achieved by the installation of water conservation devices described under the section "Mitigation Measures" in this EIR.

The Fan Pier site is currently used for warehousing and at-grade parking. Santoro's Sub Shop on Pier 1 produces the only wastewater flow from the site. Given estimates that Anthony's Pier 4 Restaurant generates an average daily wastewater flow of approximately 0.044 mgd (Preliminary Design Report, O'Brien & Gere, 1982), and estimating a relatively small wastewater flow from the Santoro Sub Shop, the total flow generated by the two proposed developments represents an average daily increase of about 0.74 mgd over present conditions.



In addition to the wastewater flows presented herein, floor drainage from the garages in the Fan Pier and Pier 4 Developments will also be directed to the sanitary sewer system. It is anticipated that this drainage will flow by gravity to structures for gas, oil and grease separation, and then will be pumped to the sanitary sewer system.

#### Adequacy of Sewer System

As found in the master planning effort, the existing sanitary sewer systems located in the study area of the Fort Point Channel/Commonwealth Flats section of Boston do not have adequate capacity to service the area's long-term development needs. Because of this concerns raised by public agencies with regard to the surcharging of existing systems, the Fan Pier and Pier 4 Developments' sanitary sewage will not discharge to the existing system located in Northern Avenue.

A new system, see Figure VI.2-15, will be installed to service the Fan Pier and Pier 4 Developments and adjacent developments. This system will be designed to be compatible with the long-term master plan systems shown on Figure VI.2-8. It is planned to initially discharge to the recently constructed 18 inch diameter sanitary system in Northern Avenue near the intersection with Viaduct Street. It is planned that the remainder of the new system will be constructed and brought on-line as the projects are built out and before the sanitary discharge exceeds the capacity of the existing 18 inch pipe. The details and schedule of construction of this new system will be closely coordinated with BWSC and other interested public and private agencies.

#### Combined Sewer Overflows

The North Branch of the South Boston Interceptor receives wastewater from the Summer and "E" Street pumping station. The Interceptor is of sufficient capacity, if clean, to carry 2.5 times the average dry weather sewage flow (ADWF) projected for the year 2010. At 3.5 times the ADWF, an overflow occurs at the regulator located at "D" Street and West First Street (see Figure VI.2-2). This was reported by Metcalf & Eddy in their February 1985 Final Draft Facility Study for BWSC. Metcalf & Eddy also showed average and peak dry weather flows for the Interceptor of 7.34 mgd and 12.13 mgd, respectively, in the year 2010. This ratio of peak to average dry weather flow is about 1.65. Since this ratio is less than 3.5, no overflows along the Interceptor should occur during dry weather conditions. Furthermore, the increase in flow to this Interceptor from the Fan Pier and Pier 4 Developments of 1.45 mgd only increases this factor to 1.85 and therefore should not cause overflows to occur during dry weather conditions. During wet weather conditions,



which cause flows to meet or exceed 3.5 times the ADWF, some wastewater flow will be contributed to the overflow by the Fan Pier and Pier 4 Developments.

The 1985 Boston Wastewater Facilities plan prepared by Metcalf & Eddy shows that, once the North Branch of the South Boston Interceptor is cleaned, it will have a capacity of more than 2.5 but less than 3.5 times the estimated year-2010 average dry weather flow (ADWF) of 7.34 mgd or approximately 22 mgd. The ADWF from the Fan Pier and Pier 4 development is estimated to be 0.74 mgd, or less than 4 percent of the interceptor's theoretical capacity. The impact of the proposed developments' sanitary discharge will be relatively insignificant on both the frequency and volume of CSO discharges. In addition it should be noted that the flow from the developments will be sanitary sewage only as the storm drainage will be separated at the project sites and discharged to the Harbor.

#### ■ Storm Drainage

All drainage from the Fan Pier and Pier 4 Development's site roadway circulation systems, paved parking area, roof drains, and pedestrian and landscaped areas will be discharged to the Boston Inner Harbor by way of on site collection systems (Figure VI.2-16). Discharge of gas, oil and grease into the Harbor will be minimized by gas/oil separator structures constructed as part of the developments. Sidewalks along Northern Avenue will drain to the street storm drainage system.

The Fan Pier and Pier 4 development plans will not increase the flows of storm drainage to the Harbor as the existing site drainage discharges directly to the harbor waters. The existing and proposed surface treatments of the parcels are similar in their runoff characteristics so that the volume of discharge will be relatively equal between the existing and proposed sites. The existing storm drainage does not benefit from separation facilities, thus it can be assumed that the quality of run-off to be discharged from the proposed systems (which will have these facilities) will be improved to a great extent.

Northern Avenue adjacent to the development sites is presently drained by the remnants of two small drainage systems at the Fan Pier and Pier 4. The planning underway for the reconstruction of Existing Northern Avenue includes the narrowing of the roadway pavement which would require a new storm drainage system. The Existing Northern Avenue reconstruction is a proposed Massachusetts Department of Public Works (MDPW) Urban Systems Project to be designed by the City of Boston. This Urban Systems Project is related to the MDPW Relocated Northern Avenue Bridge project being designed by the MDPW.



Project Water Demand

Demand for domestic water to be generated by the Fan Pier and Pier 4 Developments has been projected at 880,000 gpd (610 gallons per minute (gpm)) average daily rate and, 1130 gpm peak rate. This estimate is based upon the DEQE Title V Sanitary Code wastewater flow calculations, increased to account for consumptive water use: human use, process water, irrigation, cooking and other miscellaneous uses, including air conditioning make-up water. Estimated water demand is presented in Table VI.2-8.

Table VI.2-2  
Projected Water  
Demand Estimates:  
Fan Pier and Pier 4  
Year 1995

	Fan Pier	Pier 4*	Total
Domestic Water	0.59 mgd	0.29 mgd	0.88 mgd
Air Conditioning Make-Up Water (Peak)	<u>0.39 mgd</u>	<u>0.14 mgd</u>	<u>0.53 mgd</u>
Combined Total	0.98 mgd	0.43 mgd	1.41 mgd

\*These values include the flows generated by the existing Anthony's Pier 4 Restaurant.

The incremental demand for domestic water due to site development is estimated to be an average daily flow rate of 830,000 gpd, or about 580 gpm. The total peak air conditioning make-up water consumption rate is estimated to be an additional 530,000 gpd.

Adequacy of Water Systems

The average daily demand shown in Table VI.2-2 could be adequately supplied to the site by the existing system based on computations of field data for a hydrant discharge test performed by BWSC in December 1984 on the low service system near the intersection of Melcher Street and "A" Street. This hydrant discharge test was performed on the distribution main at the intersection of Melcher Street and "A" Street which indicated a low service system capacity of 7230 gpm at a system residual pressure of 20 psi. The data from this discharge test was used to estimate the available system capacity for the low pressure service at the Fan Pier and Pier 4 Developments sites. Computations for the system capacity at the development sites was estimated to be 4,200 gpm at a system residual pressure of 20 psi. This indicates that the maximum water demand for the Fan Pier and Pier 4 Developments can be adequately supplied by the low pressure water system. At the peak demand rate of 1130 gpm, system residual pressure would be decreased to about 56 psi.



The low service system lines serving this area are very old, but renovations have been performed in recent years such as cleaning and cement lining of the 30-inch transmission main in 1971 and the replacement of a smaller main in Sleeper Street in 1983. Based on the configuration of the entire piping system network serving the development area, it is reasonable to expect that the distribution system could deliver to the Sleeper Street and Northern Avenue area adequate water for the Fan Pier and Pier 4 Developments.

The existing 12 inch distribution line located in Northern Avenue is within the influence of the construction of both the Fan Pier and Pier 4 Developments for its entire length on existing Northern Avenue. This line will be reconstructed in a parallel alignment in the middle of the roadway adjacent to the 30 inch transmission line from the "B" Street/Northern Avenue to the proposed Sleeper Street/Northern Avenue intersections. This reconstruction will also require that new taps be made between the existing 30-inch transmission line and the proposed distribution line. The existing 30 inch transmission line is within the influence of a portion of the proposed Pier 4 construction and will be re-located from the "B" Street/Northern Avenue intersection to the Pier 4 entry drive/existing Northern Avenue intersection. The planned Low Service water system required to service the Fan Pier and Pier 4 Developments is shown on Figure VI.2-17. The scope and details of this construction will be closely coordinated with the BWSC, the roadway reconstruction and the project requirements.

The High Service system flows needed for the proposed Fan Pier and Pier 4 Development sites are based on expected building heights, floor areas, materials, occupancy, and the sprinkler systems to be used. Based on a hydrant flow test performed in the area of "A" Street and Summer Street by BWSC in July, 1983, the high service system capacity was estimated to be approximately 3,700 gallons per minute at a residual pressure of 20 psi. The needed fire flow has been estimated to be approximately 3500 gpm for these developments. The flexibility and reliability of the sprinkler systems for the Fan Pier and Pier 4 Developments will be increased with installation of fire flow pump systems and the installation of division gates between the Low and High Service water systems in the buildings; fire flows from the High Service main may be augmented from the Low Service main by opening the division gates. The planned High Service water distribution system for the Fan Pier and Pier 4 Developments is shown on Figure VI.2-18. The developers will consult with the City Fire Department and the BWSC during the design process to insure that the systems are adequate for the required fire flows.



## ■ Electric System

The existing electric supply system in Northern Avenue needs to be augmented to support the anticipated electrical loads of the Fan Pier and Pier 4 sites according to the Boston Edison Company. The electrical loads projected for the Fan Pier and Pier 4 Developments include heating and cooling, hot water, cooking, lighting and other electrical requirements. Even if space heating is fueled by gas or oil, the remaining cooling, hot water, cooking, lighting and other electrical demands would also require augmentation to the existing electrical infra-structure.

Boston Edison anticipates that a new substation will have to be built in the Northern Avenue area to furnish the electricity needs for the long-term development sites. In addition, if future developments are to be heated electrically, new duct/manhole systems and a new substation would be required. If the developments are not electrically heated, Boston, Edison still anticipates a substation installation in order to furnish power to the adjacent Commonwealth Flats development area south of Northern Avenue to Summer Street and easterly to the Boston Marine Industrial Park. A minimum size land parcel of 10,000 square feet will be required for a substation location within the Fort Point Channel/Commonwealth Flats area. The proponents will continue to coordinate efforts with the Boston Edison Company and other interested parties to develop a final electric system for the area.

A temporary scenario to meet the electric load requirements of the Fan Pier and Pier 4 Developments before implementation of the final distribution network system has been conceptually agreed to with BECO personnel. This requires the construction of a conduit and manhole system from Congress Street in Sleeper Street and in existing Northern Avenue to supply electric power from the existing BECO Atlantic Avenue substation to the development sites, see Figure VI.2-19. This system would replace the present distribution system located in existing Northern Avenue which is within the influence of the proposed construction of both the Fan Pier and Pier 4 Developments. The proposed system will be designed for inclusion in the final network system for the area. The existing 115 Kv transmission line in Northern Avenue is also within the influence of a portion of the Pier 4 Development construction and will have to be relocated. Details of the schedule and limits of required construction will be coordinated with BECO personnel.

## ■ Gas System

The Boston Gas Company will have to increase its existing gas supply capabilities to meet the anticipated gas loads to the Fan Pier and Pier 4



Development sites. The gas loads may include cooling, hot water, cooking and heating requirements. The existing 16-inch intermediate pressure (I.P.) gas main in Northern Avenue between the Boston Marine Industrial Park and "D" Street will need to be extended westerly to the development sites to supply these potential gas demands. The Boston Gas Company, in anticipation of this increased demand, has upgraded its service to the "B" Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements, see Figure VI.2-20. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other area wide load demands on that system. The existing 12-inch gas line in Northern Avenue is within the influence of the construction of both the Pier 4 and Fan Pier Developments and will be abandoned during the project construction. The function of this system will be replaced by the new intermediate pressure line to be built in existing Northern Avenue. The developers will continue to coordinate efforts with the Boston Gas Company.

■ Telecommunications System

Northern Avenue adjacent to the Fan Pier and Pier 4 Development sites is presently provided with telecommunications service utilizing overhead wires on utility poles. New England Telephone anticipates that the sites will be served by installation of an underground duct/manhole system, see Figure VI.2-21. New England Telephone is presently constructing portions of this system from its existing facility at Congress and Farnsworth Streets utilizing both conventional wiring and fiber optic systems. The upgrading plans are considering not only the Fan Pier and Pier 4 sites but also the entire Fort Point Channel/Commonwealth Flats area in South Boston. The proposed duct/manhole system is also planned to be utilized to carry emergency communications lines. The developers will continue to coordinate efforts with New England Telephone.



FIGURE VI.2-15  
Fan Pier and  
Pier 4  
Developments  
Proposed Sanitary  
Sewer System

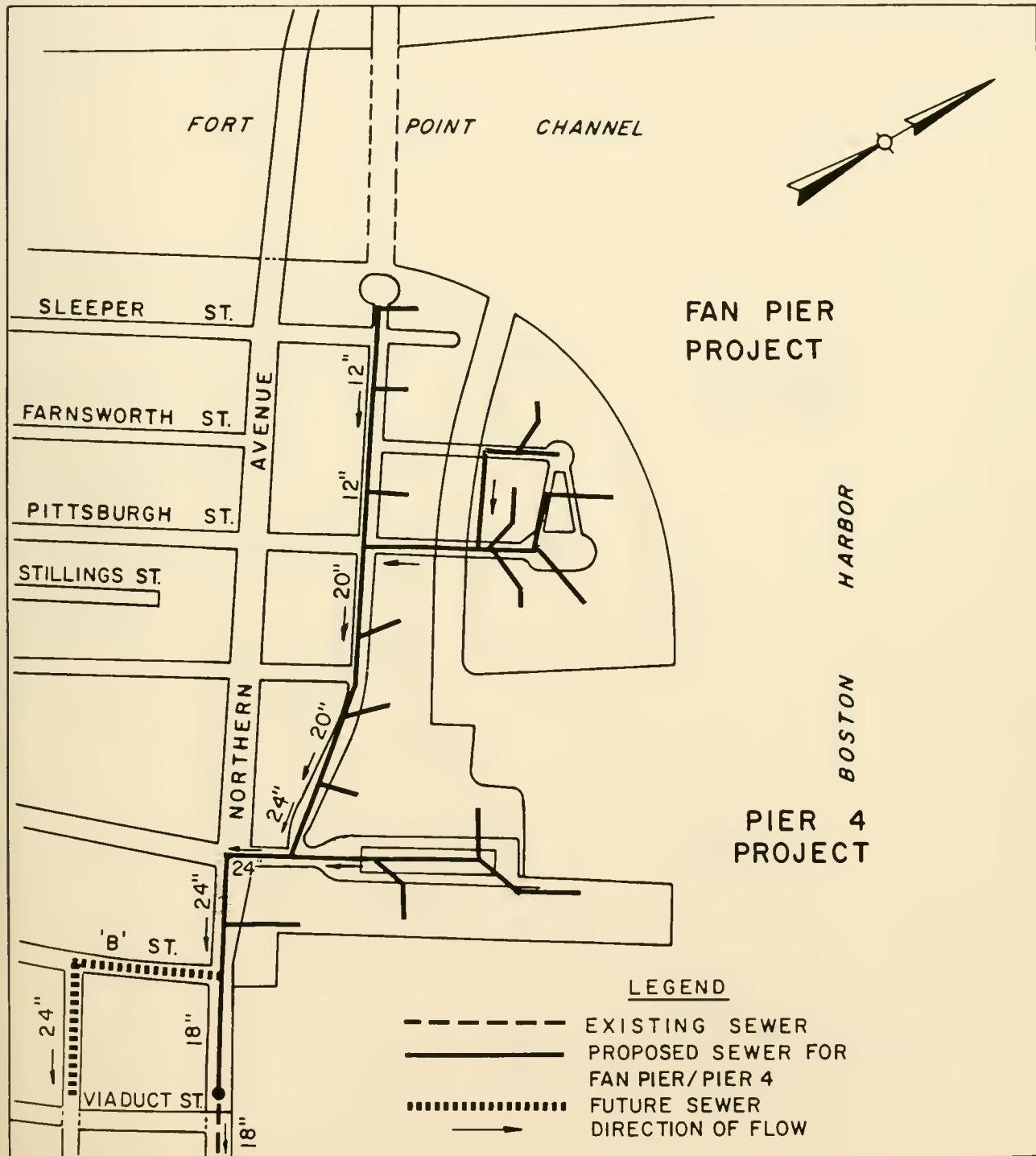




FIGURE VI.2-16  
Fan Pier and  
Pier 4  
Developments  
Proposed Storm  
Drain System

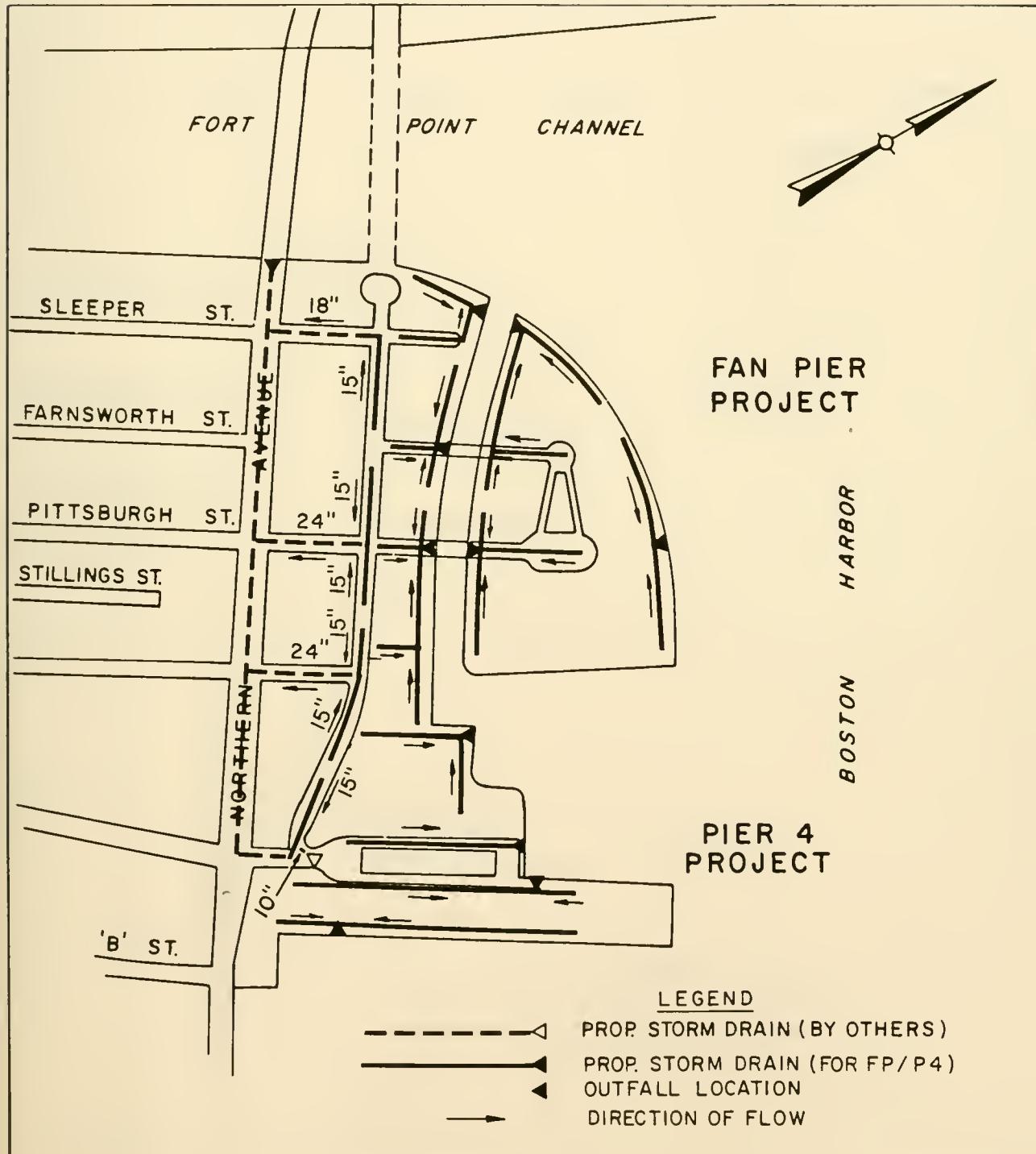




FIGURE VI.2-17  
Fan Pier and  
Pier 4  
Developments  
Proposed Low  
Service Water  
System

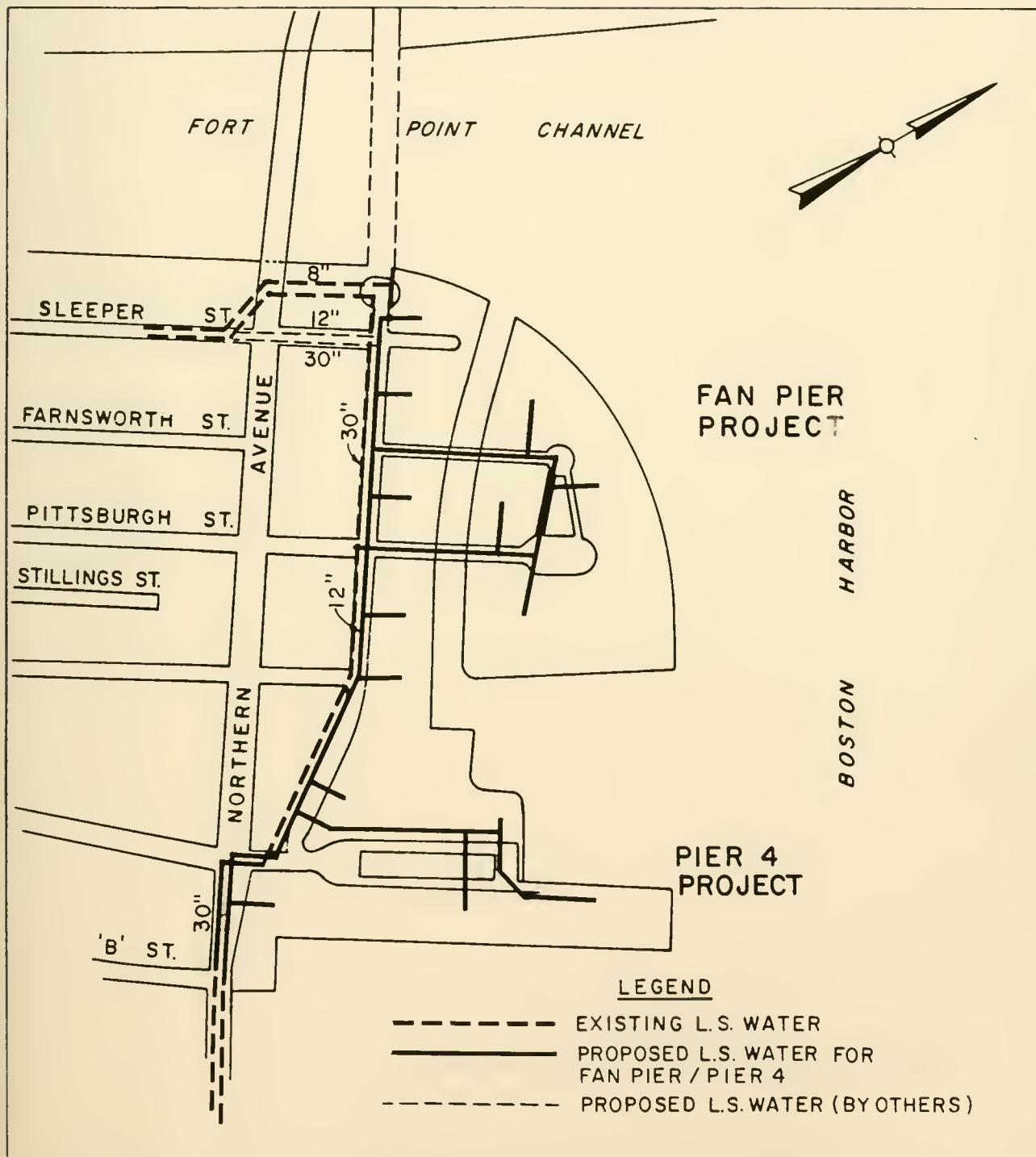




FIGURE VI.2-18  
Fan Pier and  
Pier 4  
Developments  
Proposed High  
Service Water  
System

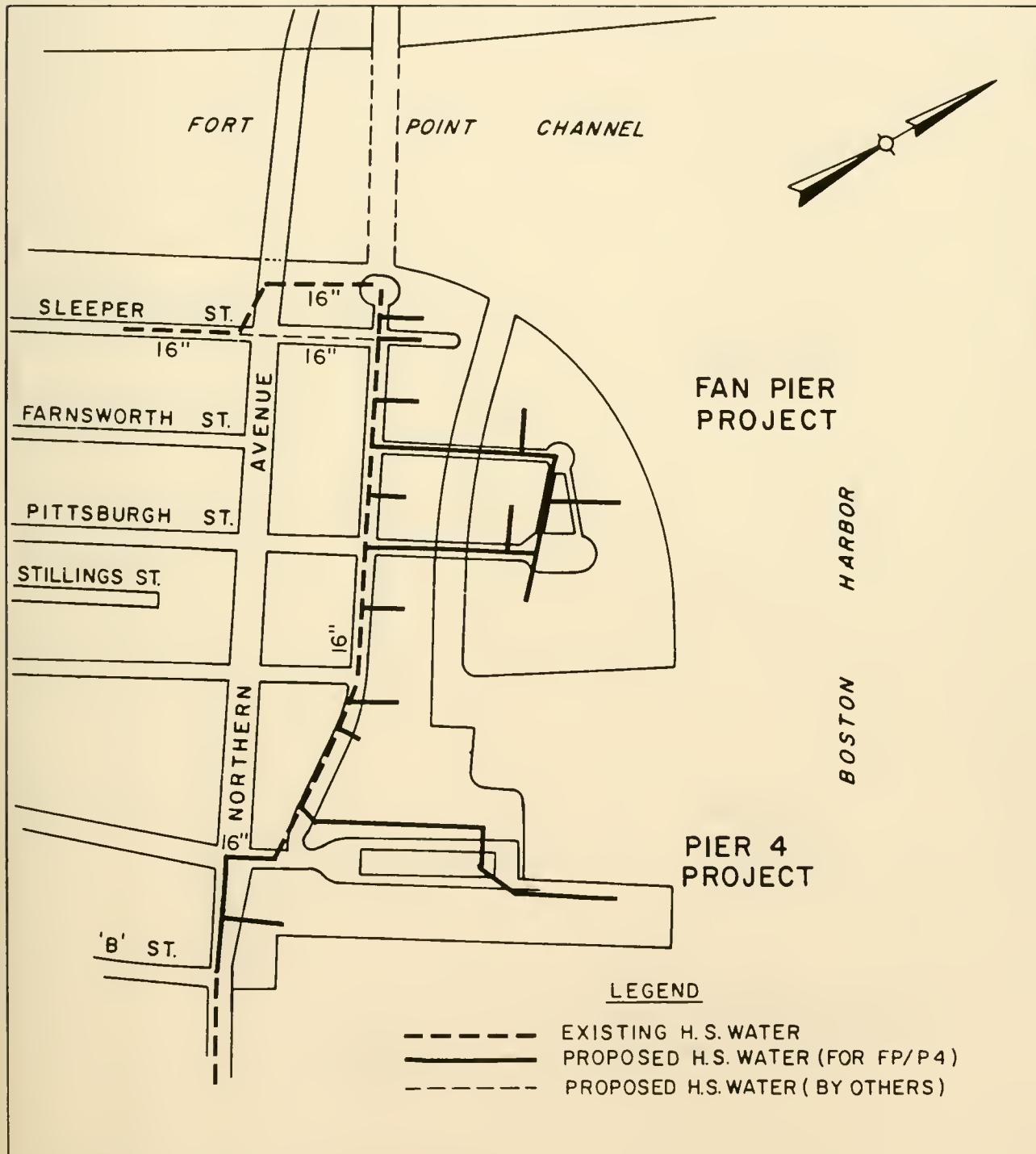




FIGURE VI.2-19  
Fan Pier and  
Pier 4  
Developments  
Proposed  
Electric System

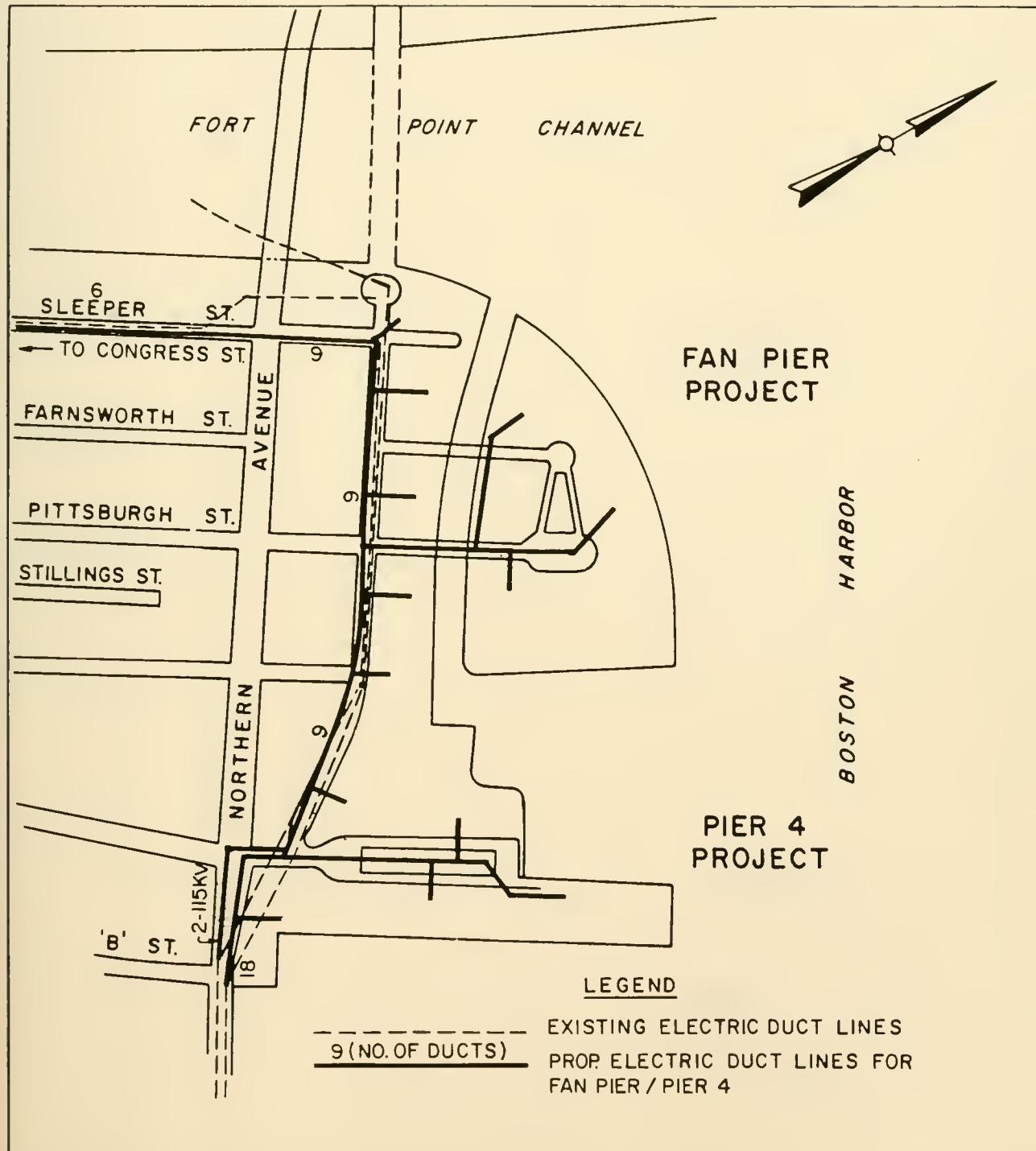




FIGURE VI.2-20  
Fan Pier and  
Pier 4  
Developments  
Proposed  
Gas System

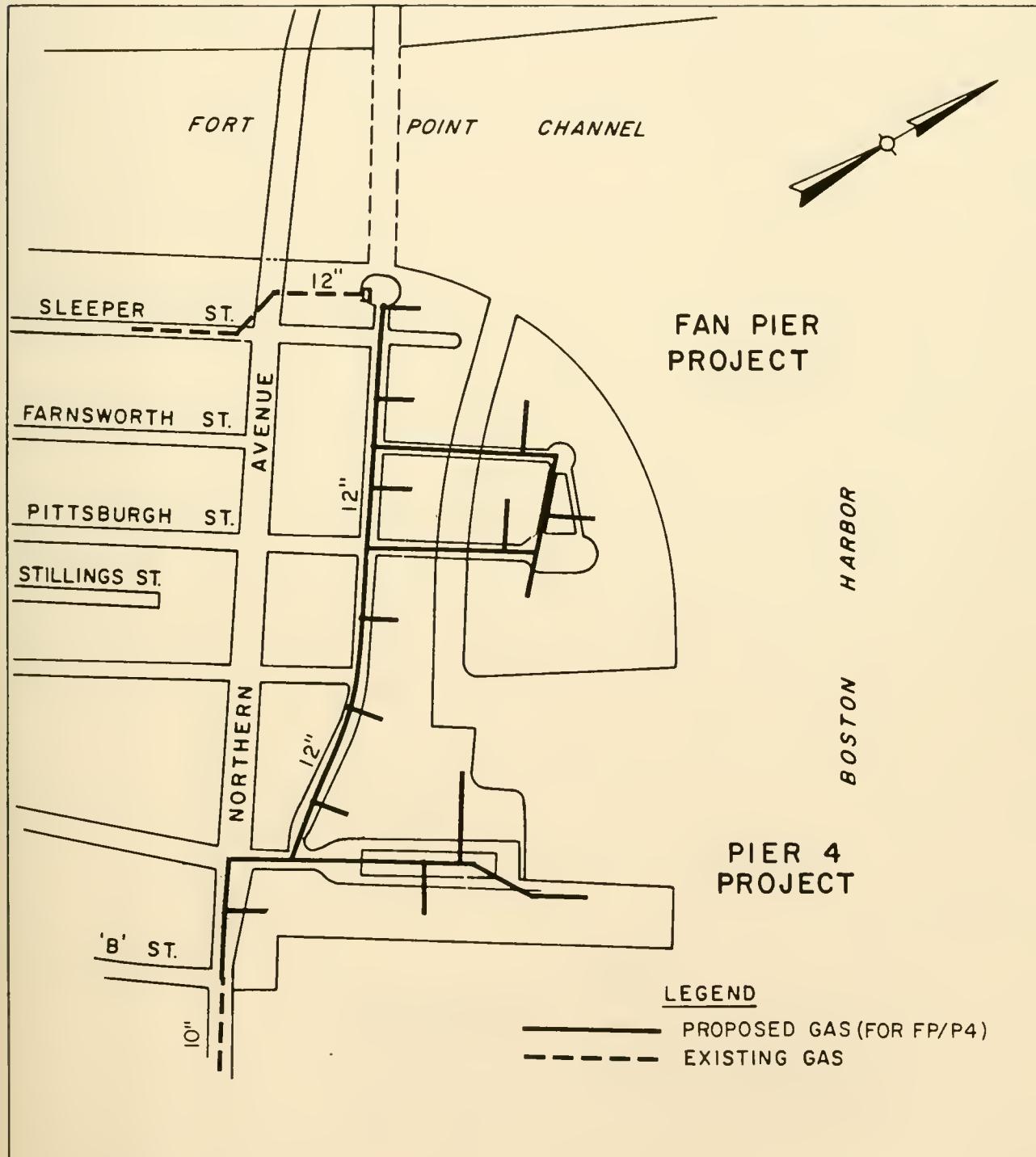
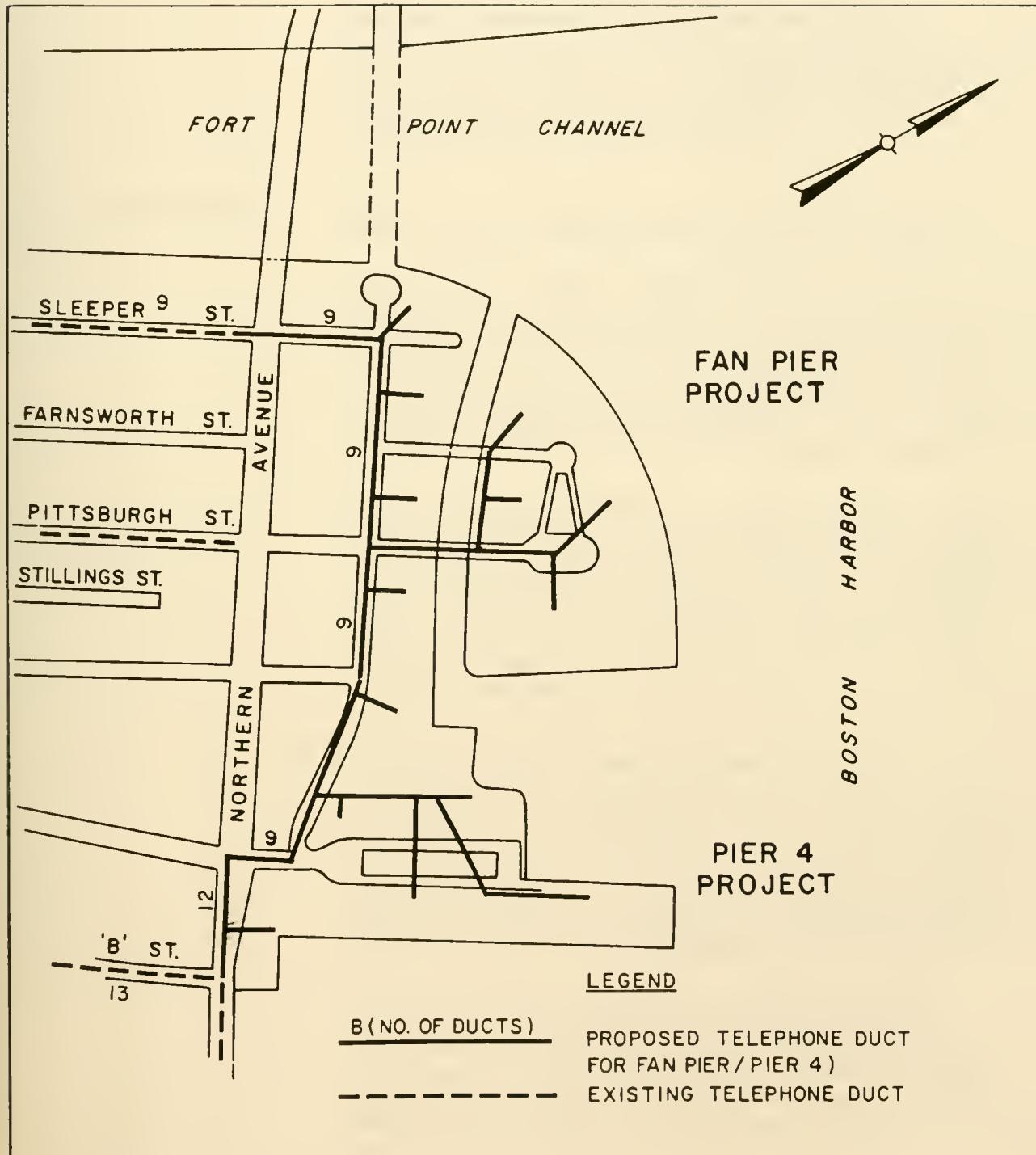




FIGURE VI.2-21  
**Fan Pier and  
Pier 4  
Developments  
Proposed  
Telecommunications  
System**





## MITIGATION MEASURES

In an effort to mitigate adverse impacts of the Developments upon the existing sanitary sewer, water supply, storm drainage, energy and telecommunications systems, the developers will continue to coordinate with BWSC and the utility companies as well as with the Executive Office of Transportation and Construction, the Massachusetts Department of Public Works, Massport, the Boston Redevelopment Authority and other area developers. Regardless of which final system configurations are adopted, the following specific measures will be employed to prevent or mitigate potentially adverse effects of the proposed Developments on the surrounding infrastructure systems.

### ■ Sanitary Sewer System

Several mitigation measures will be used to minimize adverse effects associated with sewage generation.

A new sanitary sewage collection system will be constructed with the participation of the proponents in the Fort Point Channel/Commonwealth Flats area to meet the requirements of the Fan Pier and Pier 4 Developments. This system will be constructed to conform to on-going area-wide infrastructure planning efforts to assure that it allows for long-term development of the area without adversely impacting the adjacent collection systems.

Concerning on-site mitigation, grease traps that meet DEQE Title V Sanitary Code requirements will be provided in all restaurant kitchen facilities, and they will be maintained according to BWSC regulations. In accordance with the State Building Code, water conservation devices, such as low-flow toilets and flow restricting faucets and shower heads, will be used to reduce water use and the quantity of sanitary wastewater discharged from the developments.

As previously mentioned there are neither combined sewers nor combined sewer overflows within the development areas. However, the North Branch of the South Boston Interceptor, which conveys wastewater from the development areas, does have combined sewer overflow locations. BWSC is planning to clean the North Branch of the South Boston Interceptor in the Fall of 1986 and Spring of 1987. It is anticipated that removal of the deposition in this interceptor will reduce the number of overflow occurrences experienced along this sewer.

BWSC is presently instituting a program of regular inspection and maintenance of all their overflow structures to assure that they are operating correctly. This program is intended to assure that overflows from the system are minimized to the extent possible until additional flow control and treatment facilities can be implemented.



A proposed combined sewage overflow treatment facility for overflows into Fort Point Channel and Boston Harbor is high on the Extended Portion of the Massachusetts Construction Grants Project Priority List. This MWRA facility together with the proposed South Boston CSO Consolidation Pipeline will intercept and provide primary treatment for certain overflows along and tributary to the North Branch of the South Boston Interceptor.

■ Storm Drainage System

Surface drainage from the interior roadway circulation systems, paved surface parking areas, and pedestrian and landscaped areas within the development sites will be discharged through separate storm drain systems to the Inner Harbor. Gas, oil and suspended solids separators will be constructed and maintained in each storm drain in accordance with federal, state and local requirements to minimize discharge of pollutants to the Harbor. Maintenance programs will be implemented that will include: "maintenance of ground" activities (street sweeping, public area refuse pick up, etc.) as well as operational maintenance of the separators proposed. Roof drains and cooling/circulation waters from buildings will also be discharged into the Harbor in accordance with applicable federal, state and local regulations.

■ Water Supply Systems

In accordance with the State Building Code, water conservation devices, such as low-flow toilets and flow restricting faucets and shower heads, will be used to reduce the water demand on the low service water system.

A new Low Service Water distribution line will be constructed in existing Northern Avenue with adequate capacity to supply the needs of the Fan Pier and Pier 4 Developments. This line will be constructed with the participation of the proponents in accordance with BWSC requirements, and it will meet the requirements of the area-wide infrastructure planning for the Fort Point Channel/Commonwealth Flats area.

■ Electric,  
Telecommunications  
and Gas Systems

Measures to mitigate adverse impacts due to the installation of the electric, gas and telecommunications systems required to service the development sites will include:

- Coordinated facilities planning with utility providers, area users and public agencies.
- Installation of utilities underground to improve visual quality.



- Incorporation of energy conservation into project design and operation.
- Coordination of construction activities scheduling to minimize traffic disruptions and interruption of utility service.
- Coordination with utility providers to assure the maintenance of existing levels of service to adjacent areas of the City as well as to assure that systems constructed to service Fan Pier and Pier 4 are compatible with the infrastructure planning for the Fort Point Channel/Commonwealth Flats area.



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INTRODUCTION

As part of their ongoing coordination with Boston Water and Sewer Commission (BWSC), the Developers have made substantial commitments to funding a variety of improvements to the water and sewer systems that will serve the Fan Pier and Pier 4 Developments. All system improvements will be designed and constructed to BWSC standards, and together will lead to the betterment of Boston Harbor water quality.

Appendices A, B, and C of this report provide the written documentation for each of the commitments summarized in the following sections.

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COMMITMENTS

■ Sanitary Sewer System

As shown in the Infrastructure Analysis, additional sewer facilities are needed in the BWSC sanitary sewer system to serve the proposed Fan Pier and Pier 4 Developments. The Developers have agreed to construct at their expense all such sewer facilities needed for the Fan Pier and Pier 4 Developments (see Fig. VI.2-15, in Chapter II of this report). These on-site and off-site sewer system improvements will contribute to the improvement of water quality in the Harbor.

According to BWSC, other off-site sewer facilities--including the Summer Street Pump Station (capacity 8.3 mgd)--have adequate average and peak flow capacity to accommodate areawide development through the year 2010.

Combined Sewer Overflows

To rectify long-standing problems with off-site sewage systems, the Developers have committed up to \$250,000 to reconstruct a portion of the North Branch of the



South Boston Interceptor at the corner of A and West First Streets in South Boston. The existing structural deficiency at this location presently restricts flows and aggravates combined sewer overflows to Boston Harbor. The reconstruction of the Interceptor in conjunction with BWSC's scheduled cleaning of the Interceptor (April-December 1987) will eliminate current dry weather combined sewer overflows and will dramatically reduce the incidence and volume of wet weather overflow.

#### 2:1 Inflow and Infiltration

Inflow is the rainwater or uncontaminated cooling water introduced to the sewer system illegally, through foundation drains, cellar drains, sump pumps, or roof leaders. Infiltration occurs when the groundwater level rises above the pipe crown and enters the sewer system through cracks, breaks, or deformities. The Massachusetts Water Resources Authority's 2:1 Inflow and Infiltration (I/I) reduction policy requires a developer to decrease the amount of inflow and infiltration in a municipality's sewer system in a ratio of 2 to 1 as compared to the amount of sanitary sewage discharge the proposed project creates.

In response to this regional and municipal goal, the Developers have agreed to a combination of on-site and off-site improvements. To the extent necessary to achieve the 2:1 I/I goal, the Developers agree to pay for reconstruction of sanitary sewer facilities in existing Northern Avenue. In addition, the Developers will fund the reconstruction of a portion of the drainage and sewer facilities in the street grid south of existing Northern Avenue, to the extent such reconstruction is needed to satisfy the 2:1 I/I goal for the Projects (see Figure VI.2-8, in Chapter II of this report).

#### Off-site Connections

The proposed sewer system for the Fan Pier and Pier 4 Developments includes a connection to the existing 18-inch pipe in Northern Avenue, recently constructed by Massport (see Figure VI.1-15, in Chapter II of this report). According to BWSC, this 18-inch sewer between B Street and Trilling Way is unable to convey the projected 2010 peak sewage flows without surcharging the system. However, BWSC acknowledges that this sewer can receive sewage from the Fan Pier and Pier 4 Developments for some interim period. The Developers will work toward an agreement with Massport to allow, in the short term, use of Massport's 18-inch sewer pipe by the Fan Pier and Pier 4 Developments.



For the long term, the analysis indicates that a 24-inch pipe will be needed to accommodate sewage flows for the area. While several alternative configurations are under investigation, a plan routing the system across Commonwealth Flats is considered most efficient. The Developers will work toward an agreement with Massport to allow an easement for this new sewer line across the Commonwealth Flats. This sewer line will be constructed by the Developers and others connecting to this sewer system.

#### ■ Storm Drainage System

##### Separated System

The Developers' commitments include construction of a separate storm drainage system that will discharge storm water from the Fan Pier and Pier 4 sites roadway circulation systems, paved parking areas, roof drains, and pedestrian and landscaped areas into Boston Harbor (see Figure VI.2-16, in Chapter II of this report). The on-site collection systems will subject stormwater flows to sedimentation separation and skimming using BWSC-type catch basins. As a result of these facilities and change in land use, the quality of storm water drainage from the sites to the Harbor will greatly improve.

#### ■ Water Supply Systems

In addition to the sewer systems, the Developers have agreed to construct at their expense all water facilities needed for the Fan Pier and Pier 4 Developments and necessary to tie the Projects into the BWSC systems (see Figures VI.2-17 and VI.1-18, in Chapter II of this report).

The Developers have also agreed to upgrade the existing high service and low service water mains in existing Northern Avenue. For the high service water system in Northern Avenue, the Developers will fund the cleaning and cement lining of the existing 16-inch service main. For the low service water system, the Developers will construct a new 12-inch service line in Northern Avenue for the length of the project sites.

Fire protection for the Developments will be supplied solely by either the high service or low service water systems, but not both. All construction will be done in accordance with BWSC standards and with their review and approval.

##### Water Conservation

In accordance with the State Building Code, water conservation devices, such as lowflow toilets and flow-restricting faucets will be used to reduce water demand on the water system. In addition, the Developers are committed to studying water conservation measures that



can be implemented at the sites and which go beyond state building code requirements. Consentini Associates, mechanical engineers representing the Developers, are investigating approaches to minimizing water consumption and sanitary discharge from the Projects.

Two basic systems will be investigated: (1) the domestic water system, and (2) the air conditioning system. Reductions in water use in these two systems will also reduce sanitary sewage generation. The approaches being considered include:

- o Water conserving fixtures.
  - Additional water conserving fixtures with lower design flows than those required by code.
- o HVAC/system.
  - Air conditioning systems that utilize standard induced draft type evaporative cooling towers.
  - A water filtering system for cooling tower water.
  - A water softener to allow recirculation of the bleed water.
  - More sophisticated water treatment program to reduce bleed-water requirements.

The Developers will continue to coordinate with the BWSC on all issues pertaining to water conservation for the Projects.



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INTRODUCTION

No public funds will be required to meet the Fan Pier or Pier 4 Developments' public and private utility service needs. The total cost of planning, engineering, and construction of each of the required system modifications will be met by either direct expenditure of funds by the Developers or expenditure of funds by the utility suppliers in anticipation of future revenues generated by the developments' use of their services. All project utility systems are scheduled for construction between 1987 and 1990.

In addition to developing site specific utility plans, the Developers have prepared master plans for each of the major distribution/collection systems in the Fort Point Channel/Commonwealth Flats area of South Boston to assure that the system modifications necessary to support the Fan Pier and Pier 4 Developments reflect the needs of future area development. These master plan systems have been reviewed by each utility provider and have been accepted as a reasonable first step in developing service systems in the area. These plans are now being used as a basis for ongoing discussions with all concerned parties to work out specific details and system configurations.

The following sections summarize the responsibilities associated with each proposed utility system plan.

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PUBLIC UTILITIES

The primary focus of the infrastructure planning for the Fan Pier and Pier 4 Developments has been the investigation of necessary measures to provide public



utility service to development sites. Both on-site and off-site improvements to the existing sanitary sewer, storm drainage, and water supply systems have been investigated.

#### ■ Sanitary Sewer Systems

On-site and off-site sewer system improvements to be undertaken by the Developers will contribute to the betterment of areawide services and will help contribute to the improvement of water quality in Boston Harbor (see Figure VI.1-15, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, and construction of the sanitary sewer system subject to the review and approval of BWSC.

Off-site, the Developers will plan, engineer, and construct those specific modifications to the existing sanitary sewer system required to accommodate the Fan Pier and Pier 4 Projects, including:

- Reconstruction of the sanitary sewer facilities in existing Northern Avenue.
- Reconstruction of a portion of the sewer facilities in the street grid south of existing Northern Avenue, to the extent such reconstruction is needed to satisfy the state's 2:1 I/I goal for the Projects.
- Willingness to work toward an agreement with Massport to allow, in the short term, use by Fan Pier and Pier 4 Developments of Massport's 18-inch sewer pipe in existing Northern Avenue.
- Willingness to work toward an agreement with Massport to allow, in the long term, an easement for a new sewer line across the Commonwealth Flats, to be constructed by the Developers and others who will use the sewer.
- Agreement to fund and implement replacement of a portion of the North Branch of the South Boston Interceptor at the intersection of A and West First Streets.

All system design details will be included in plans required to obtain site plan approval and sewer connection permits for the projects. Actual construction of the system modifications will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service, and to ensure all required modifications are completed before project opening.



## ■ Storm Drainage System

The Developers' plans for storm drainage will further contribute to improved water quality flows to the Harbor (see Figure VI.1-16, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, construction, and maintenance of the storm drainage system, including pollution-abatement facilities. System plans will be subject to the review and approval of BWSC.

Off-site, the Developers have agreed to pay for the reconstruction of storm drainage facilities in existing Northern Avenue. In addition, the Developers will fund the reconstruction of a portion of the drainage and sewer facilities in the street grid south of existing Northern Avenue, to the extent that such reconstruction is needed to satisfy the 2:1 inflow and infiltration goal for the Projects.

The Developers are also committed to ongoing coordination with the responsible agencies to ensure that adequate storm drainage systems are incorporated into the design of the new roadway systems adjacent to the Developments. It is anticipated that actual construction of these systems will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service.

## ■ Water Supply System

The Developers have agreed to construct at their expense all water facilities needed for the Fan Pier and Pier 4 Developments necessary to tie the Projects into the BWSC system (see Figures VI.2-17 and VI.2-18, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, and construction of the water supply/collection system, subject to the review and approval by BWSC. In addition, the Developers will commit to studying water conservation measures that can be taken at the sites and which go beyond state building code requirements.

Off-site, the Developers have committed to the funding, planning, engineering, and construction of those specific modifications to the water supply system required to accommodate the Fan Pier and Pier 4 Projects, including:

- o Upgrading the existing high and low service water mains in existing Northern Avenue including the cleaning and cement lining of the existing 16-inch high water main and the construction of a new 12-inch low service water main.



- Relocating any water lines in Northern Avenue that may conflict with proposed building foundation construction.

Fire protection for the Developments will be supplied solely by either the high service or low service water systems, but not both. The Developers will continue to coordinate with BWSC on this issue.

All system design details and system descriptions will be included in the plans and reports required to obtain site plan approval. Such approval must be obtained before building permits are issued by the city.

Actual construction of the system modifications will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service and to ensure all required modifications are completed before the project opening.

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#### PRIVATE UTILITIES

The other component of the infrastructure planning for the Fan Pier and Pier 4 Developments includes the coordination of plans for private utility service to the sites. To this end, the Developers have considered both on-site and off-site steps to prevent any adverse impacts on the areas electric, gas, and telecommunications systems.

The Developers have investigated all public utilities in great detail and will continue to coordinate with utility providers to assure the maintenance of existing levels of service to the South Boston Community as well as to assure that systems constructed to service Fan Pier and Pier 4 are compatible with the infrastructure planning for the Fort Point Channel/Commonwealth Flats area.

#### ■Electric Systems

On-site, the Developers are responsible for the planning, engineering, and construction of the Fan Pier and Pier 4 Developments electric system subject to the review and approval of Boston Edison Company.

Off-site, the Developers will continue their ongoing coordination effort with the Boston Edison Company (BECO) staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-19, in Chapter II of this report).



BECO will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by BECO in anticipation of revenue generated by the projects.

The Developers will work with BECO and the responsible agencies to coordinate construction of the proposed system modifications site and local roadway construction to ensure the availability of the required electric capacity and to minimize the impacts on traffic and existing services.

It should be noted that BECO has stated that their studies indicate that the Fan Pier and Pier 4 Developments' electrical needs will be met from the existing Atlantic Avenue and L Street transformer station.

#### ■ Gas System

On-site, the Developers are responsible for the planning, engineering, and construction of the gas system subject to the review and approval of Boston Gas.

Off-site, the Developers will continue their ongoing coordination effort with Boston Gas staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-20, in Chapter II of this report).

Boston Gas will be responsible for the planning, engineering and construction of any modifications required for its system to meet the needs of the Fan Pier and Pier 4 Projects. The cost of these efforts will be born by Boston Gas in anticipation of revenue generated by the projects.

The Boston Gas Company, in anticipation of the necessity to increase its existing gas supply capability, has upgraded its service to the B Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other areawide load demands on that system.

The Developers will work with Boston Gas and the responsible agencies to coordinate the construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required gas capacity and to minimize the impacts on traffic and existing service.



Initial modifications to the gas distribution system have been completed by Boston Gas in anticipation of the Fan Pier and Pier 4 Projects, and in coordination with the reconstruction of existing Northern Avenue.

■ Telecommunications System

On-site, the Developers are responsible for the planning, engineering, and construction of the telephone system subject to the review and approval of New England Telephone (NET).

Off-site, the Developers will continue their ongoing coordination effort with NET staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' telecommunications requirements (see Figure VI.2-21, in Chapter II of this report).

NET will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by NET in anticipation of revenue generated by the projects.

The Developers will work with NET and the responsible agencies to coordinate construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required capacity and to minimize the impacts on traffic and existing services.

NET is presently in the process of upgrading their facilities in anticipation of not only the Fan Pier and Pier 4 Developments, but also the full future development of the area. They have installed conduit systems in B Street, Pittsburgh Street, Farnsworth Street, and Sleeper Street that can be extended during the reconstruction of these roadways to meet the full build requirements of the area.



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- A Letter of 1/30/87 to the Boston Water and Sewer Commission from HBC Associates and the Boston Mariner Company, Inc.
- B Letter of 2/2/87 to the Secretary of Environmental Affairs from the Boston Water and Sewer Commission.
- C Letter of 1/15/87 to the Boston Water and Sewer Commission from Cosentini Associates (representing HBC Associates and the Boston Mariner Company, Inc.) to the Boston Water and Sewer Commission.
- D Letter of 3/13/87 to HBC Associates and the Boston Mariner Company, Inc. from Parsons, Brinckerhoff, Quade & Douglas.
- E Letter of 1/2/87 to the Secretary of Environmental Affairs from Boston Gas Company.
- F Letter of 3/13/87 to HBC Associates and the Boston Mariner Company, Inc. from Parsons, Brinckerhoff, Quade & Douglas.



600 Atlantic Avenue  
Suite 2100  
Boston, MA 02210  
617 367-0500

January 30, 1987

Mr. Charles Button, P.E.  
Boston Water and Sewer Commission  
10 Post Office Square  
Boston, MA 02109

Dear Mr. Button:

HBC Associates and Boston Mariner Company, Inc. (the "Developers") have discussed water and sewer infrastructure requirements of the Fan Pier and Pier 4 developments with the Boston Water and Sewer Commission ("BWSC") in several recent meetings. During these discussions the following points were made:

1. In response to a letter dated December 1, 1986 from Charles Button of the BWSC, the Developers agree to study water conservation measures that can be taken at the site and which go beyond state building code requirements. By letter dated January 15, 1987, Cosentini Associates, mechanical engineering consultants for the Developers, responded to the BWSC letter by listing the various water and sewer measures to be studied. The Developers intend a continuing dialogue with BWSC on this issue.
2. The Developers agree to construct at their expense all water and sewer facilities directly related to the Fan Pier and Pier 4 developments and necessary to tie the projects into the BWSC systems. Included is the reconstruction of existing sanitary sewer facilities in existing Northern Avenue.
3. The Developers agree to meet the secretary's recommendation for 2:1 infiltration and inflow ("I and I") reduction by a combination of on-site and off-site improvements. To the extent necessary to achieve this 2:1 I and I goal, the Developers agree to pay for reconstruction of sanitary sewer facilities in existing Northern Avenue. In addition, the Developers agree to pay for the reconstruction of a portion of the drainage and sewer facilities in the street grid south of existing Northern Avenue, to the extent that such reconstruction is needed (in addition to reconstruction of



existing Northern Avenue) to satisfy the 2:1 goal for the projects and assuming that such improvements are not funded by city, state or federal roadway or infrastructure reconstruction grants. This commitment is based upon what the Developers understand today to be the scope of this project. If this scope should change substantially in the future due to unforeseen circumstances, the Developers reserve the right to work with BWSC to achieve an acceptable solution. The Developers may take measures at their expense such as the installation of meters which allow the measurement of infiltration and inflow eliminated at the Fan Pier and Pier 4 sites by Developer improvements for purposes of meeting this 2:1 I and I goal.

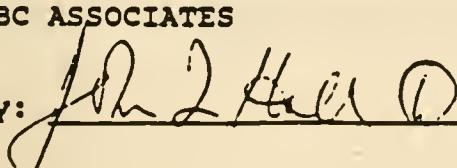
4. The Developers agree to work toward an agreement with Massport to allow, in the short term, use by the Fan Pier and Pier 4 developments of Massport's 18" sewer pipe in existing Northern Avenue, and in the long term an easement for a new sewer line across the Commonwealth Flats, to be constructed by the Developers and others who will use the sewer.
5. The Developers agree to pay to fund and implement replacement of a portion of the North Branch of the South Boston Interceptor at the intersection of A Street and West First Streets. Peak flows in this Interceptor are now restricted at A Street as it passes beneath a storm drain. This commitment is based upon what the Developers understand today to be the scope of this project. If this scope should change substantially in the future due to unforeseen circumstances, the Developers reserve the right to work with BWSC to achieve an acceptable solution.

BWSC and the Developers agree that the sewer, water, and drainage system improvements committed to by the Developers will contribute to the betterment of areawide service and will help contribute to the improvement of water quality in Boston Harbor.

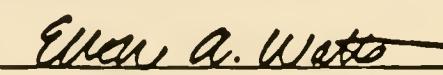
This letter sets forth all oral or written agreements to date among BWSC and the Developers. The Developers' obligations pursuant to this letter are, of course, conditioned upon construction of the Fan Pier and Pier 4 developments.

Yours very truly,

HBC ASSOCIATES

By: 

BOSTON MARINER COMPANY, INC.

By: 



10 Post Office Square  
Boston, Massachusetts 02109  
617-426-6046

February 2, 1987

Secretary James S. Hoyte  
Executive Office of Environmental Affairs  
100 Cambridge Street, 20th floor  
Boston, MA 02202

RECEIVED

RES 2 1-1

Attn: MEPA Unit

Office of the Secretary of  
the Commonwealth

RE: Final Environmental Impact Report-EOEA #4426/4564  
Fan Pier Development/Pier 4 Development

Dear Secretary Hoyte:

The Boston Water and Sewer Commission (BWSC) has reviewed the subject Final EIR and while the presented future sewer, water and drain systems in this section of South Boston advance the overall planning for the area in a responsible and technically feasible manner, such plans must not be considered BWSC master plans to be employed by future developments. The proposed sewer, water and drain system improvements to be undertaken by the Fan Pier/Pier 4 proponents will contribute to the betterment of BWSC areawide services and will help contribute to the improvement of water quality in Boston Harbor. Our comments are as follows:

1. North Branch of the South Boston Interceptor and Combined Sewer Overflows:

A. BWSC has an on-going commitment to maintain and upgrade our sewerage systems to maximize the capacity of these sewers and to reduce the extent of combined sewage and to minimize sewage discharges into Boston Harbor. A contract for the cleaning of the subject Interceptor has been awarded by BWSC, and the cleaning operations to restore this Interceptor to its designed hydraulic capacity will commence in April 1987. This work is scheduled for completion in December 1987. The effect of this work will be to restore the Interceptor to its original design capacity, thereby reducing the occurrence and volume of combined sewer overflows.

B. Development assumptions for the South Boston area are presented in BWSC's 1985 Wastewater





Facilities Plan, but are augmented for the developments at Fan Pier/Pier 4 and projections for the McCourt (Cabot, Cabot and Forbes) property. BWSC analyses for sewer, water and drain systems in this part of South Boston are based upon a design year of 2010, well beyond the proposed completion of the Fan Pier/Pier 4 developments in 1995. The hydraulic analyses performed to determine the impact of the proposed Fan Pier/Pier 4 developments on this Interceptor are based on (1). The Final EIR and supporting engineering documentation provided by the proponents' Engineer; (2). Development assumptions; (3). Full availability of the Interceptor's designed capacity; (4). Flow assumptions of the tributary local sewerage systems (Refer to Paragraph 2D), and (5). The correction of a hydraulic deficiency caused by a section of depressed sewer which presently exists at the intersection of "A" Street and West First Street. This existing structural deficiency aggravates combined sewer overflows into Boston Harbor, because it restricts the design capacity of the Interceptor. The Fan Pier/Pier 4 developers have agreed to undertake the reconstruction of this section of the Interceptor so as to reduce the incidence and volume of combined sewer overflows.

C. The Fan Pier/Pier 4 developers have agreed to implement the Secretary's recommendation for a 2:1 infiltration and inflow ("I/I") reduction by a combination of on-site and off-site improvements.

During wet weather flow conditions, as a result of implementation of the Interceptor cleaning program, implementation of a reconstruction of the Interceptor at "A" Street and the implementation of a 2:1 "I/I" reduction, the wastewater flows from the Fan Pier/Pier 4 developments will not cause any increase in the number of combined sewer overflow events.

D. Hydraulic Analyses indicate that the only measurable effect on the Interceptor by a long-term areawide development to the year 2010 will occur along West First Street between "A" Street and "F" Street.





Within this length of the Interceptor the only impacted combined sewer overflow is located at the "D" Street intersection. During the 2010 peak dry weather flow condition, an increase in the depth of flow for this section of the Interceptor will amount to only approximately 3 inches. Such an increase in flow depth does not adversely impact the Interceptor and it will not cause a dry weather overflow to occur.

2. Local Sewerage System (Northern Avenue from Sleeper Street to Trilling Way through Commonwealth Flats to the Summer Street Pump Station to "E" Street to the North Branch of the South Boston Interceptor)
  - A. The hydraulic analyses performed to determine the impact of the proposed Fan Pier/Pier 4 developments on this sewerage system are based upon (1). The Final EIR and supporting engineering documentation provided by the proponents' Engineer; (2). Current available data for all proposed development and (3). Flow assumptions for tributary developments (Refer to Paragraph 2D).
  - B. The existing sewerage system on Northern Avenue from Sleeper Street to "B" Street is inadequate to handle the peak design flows from the Fan Pier/Pier 4 developments and other possible areawide developments for the year 2010. The proponents have committed to reconstruct the sewer in the Northern Avenue, as detailed in the Final EIR. The existing 18-inch sewer in Northern Avenue from "B" Street to Trilling Way also is unable to convey the projected peak 2010 sewage flows without surcharging the sewerage system. However, the 18-inch sewer can receive sewage from the Fan Pier/Pier 4 developments for some interim period which will be a function of the projects' construction progress. The proponents therefore plan to "temporarily" connect to this existing 18-inch sewer. Subsequently, the proponents will construct a 24-inch sewer through Massport property from "B" Street to Trilling Way when the BWSC and/or Massport indicates that the capacity of the existing 18-inch





sewer cannot accept the flows being generated from Fan Pier/Pier 4 in addition to future World Trade Center sewage flows. Ownership of this existing 18-inch sewer is in the process of being transferred to the BWSC from Massport. BWSC is awaiting confirmation from Massport concerning the granting of an easement for the construction of the 24-inch sewer. BWSC will coordinate with the proponents and Massport, where applicable, regarding the scheduling, sizing and the construction of the proposed sewerage systems presented in the final EIR and, in particular, the utilization and implementation of the "temporary" connection between existing and proposed sewerage systems.

- C. The existing 30-inch sewer through Commonwealth Flats and the existing sewer along "E" Street each has a hydraulic capacity which very closely corresponds to the peak pumping capacity of the Summer Street Pump Station. This system can adequately handle the proposed 2010 areawide flows which will be transported through it. BWSC will closely coordinate other development proposals in the area tributary to this sewerage system to ensure that its capacity is not adversely impacted.
- D. The existing Summer Street Pump Station has peak design capacity of 8.3 mgd. Based upon projected peak 2010 areawide sewage flow data, it appears that all of the proposed developments north of Congress Street would approximate this capacity. Consequently, BWSC is planning to convey all sewage flows from projects in the area bounded by Congress Street, Fort Point Channel, New Northern Avenue and "B" Street to the "A" Street sewerage system. Sewage flows from developments in the area north of the New Northern Avenue will be directed to the Summer Street Pump Station. The concept of such a sewerage system configuration was correctly presented in the Final EIR.





### 3. Storm Drainage System

A. The proposed Fan Pier/Pier 4 site drainage will not impact any existing BWSC storm drainage collection system. However, the areawide drainage plans presented in the Final EIR will connect to drainage systems to be installed in the New Northern Avenue which is scheduled for construction in the near future. BWSC met with the State Department of Public Works on December 4, 1986 to initiate the coordination of planning for the storm drainage system to be built within the area. BWSC is awaiting the DPW's response to the comments which we presented at the meeting. We will continue to coordinate this issue with all concerned parties to assure that the proper storm drainage system is constructed as part of the DPW's construction. The Final EIR also indicates that the extension of the drainage system into the old Northern Avenue will be completed for the Fan Pier/Pier 4 developments. Therefore, BWSC will coordinate with the proponents regarding the construction of this system.

### 4. High Service and Low Service Water Supply Systems.

A. Water supply to the Fan Pier/Pier 4 developments can be provided without adverse consequences to any of our existing customers. The proponents have agreed to upgrade the existing high service and low service water mains in Northern Avenue to assure that the water supply systems adjacent to their developments will be their optimum capacities. BWSC will coordinate with the proponents regarding the cleaning and cement lining of the existing 16-inch high service water main, construction of a new 12-inch low service water main and the relocation of portions of the existing 30-inch and 16-inch water mains in Northern Avenue which were detailed in the Final EIR.

B. BWSC has received the commitment of the Fan Pier/Pier 4 proponents to investigate and utilize where feasible, methods of achiev-





ing water conservation which will not only meet but exceed those achieved in conventional devices as required under the State Plumbing Code.

- C. Preliminary findings of an ongoing BWSC study have predicted that peak hour deficiencies at the extremities of the southern low service area, such as at Fan Pier/Pier 4, may occur by the year 2010. However, this situation is the result of existing deficiencies in the water supply system itself, and it will occur irrespective of whether Fan Pier/Pier 4 is developed. BWSC will be monitoring and if required, correcting this condition in the southern low system as part of its annual Capital Improvement Program.
- D. Fire protection for the Fan Pier/Pier 4 developments must be supplied solely from either the high service or low service water systems, but never from a combination of both systems as was suggested in the final EIR.

#### 5. General Comments

- A. The BWSC will continue to coordinate with the Fan Pier/Pier 4 developers on all issues pertaining to the implementation of proposed sewerage, water and drainage systems presented in the Final EIR to ensure that the concerns of all affected parties are properly addressed. Such coordination will be accomplished as part of the site plan and sewer connection permit approval process, and such approval will be subject to the proper fulfillment of the requirements, rules and regulations of the BWSC. In the event it becomes necessary to adopt alternative configurations in lieu of the systems presented in this Final EIR, the proponents will be similarly required to address all of the concerns and requirements of the Boston Water and Sewer Commission.
- B. As construction of the new Northern Avenue



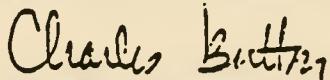


Bridge project appears to be imminent, BWSC will coordinate with the the State DPW and all concerned parties the proper implementation of sewerage, water and drainage systems to assure that the ultimate systems are built as part of this project.

- C. The BWSC will coordinate as required with federal, state, city, public and private agencies regarding the issue of funding and the extent of responsibility of each proponent for the implementation of the areawide sewerage, water and storm drainage systems presented in this Final EIR.
- D. It is strongly urged that all future South Boston developments be required to adopt the same planning approach presented in this EIR, as part of their EIR's, to assure that all pertinent concerns are adequately addressed and that all BWSC master plans are properly updated. The Boston Water and Sewer Commission wants to emphasize that the system plans presented in this Final EIR are valid only as a starting point in planning for anticipated future development, and consequently must not be considered an approved master plan to be employed by other future projects.

The Fan Pier/Pier 4 developments are the beginning of an extensive development program planned within this section of South Boston. Consequently, it is extremely important that the concerted effort among all affected parties initiated by this EIR be maintained to ensure that all pertinent future concerns are properly addressed and that adverse impacts are prevented or mitigated.

Very truly yours,

  
Charles Button, P.E.  
Chief Engineer



# Concertini Associates

CONSULTING ENGINEERS

Mechanical Engineer  
William Lawrence

44 Brattle Street, Cambridge, Mass. 02138  
Telephone (617) 876-3830

Partners  
M. A. Mam. P.  
J. Weisbin, P.  
D. Michaeli, P.  
D. Morur, P.  
A. Tinfo, P.  
R. P. Leber, P.  
D. C. Mam. P.  
S. A. Quart, P.

January 15, 1987

Boston Water & Sewer Co.  
10 Post Office Square  
Boston, MA 02109

Attention: Charles Button, P.E.

Reference: Pier 4/Fan Pier

Gentlemen:

In our efforts to make the Fan Pier/Pier 4 Developments as environmentally responsible as possible we the mechanical design engineers are investigating ways in which we can go beyond the systems required in the building code to minimize water consumption and sanitary waste discharge from our projects.

Two basic systems will be investigated - the air conditioning systems, for reduction in water consumption, and the sanitary systems, for reductions in water usage and sanitary sewage generation.

The air conditioning systems proposed for the Pier 4/Fan Pier developments will utilize standard induced draft type evaporative cooling towers to provide the cooling medium for the building. Alternate type systems such as dry coolers, water conservation cooling towers (combination of evaporative cooling tower and dry cooler) and fluid coolers were considered in lieu of evaporative cooling towers for the project but were discounted because of the impact on architectural space requirements, structural loads and major increase in the overall electric energy consumption for the alternate cooling system. However, the following water conservation systems are being considered for the project.

1. Filter and Sand Separator; use of a water filtering system for the cooling tower water to reduce the amount of cooling tower bleed water.



Boston Water & Sewer Co.  
January 15, 1987  
Page 2

FEB 20 1987

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2. Side-Stream Water Softener; use of a water softener to allow the bleed water (normally dumped) to be recirculated.
3. Improve Water Treatment; use of a more sophisticated water treatment program to reduce bleed-water requirements.

The following fixture types will be investigated for possible project use:

<u>Fixture</u>	<u>Code</u>	<u>Water Usage</u>	<u>Remarks</u>
shower valve & head	3 GPM	2.75	1
lavatory private	not listed	0.05 GPM	
lavatory public metering	0.25 GPM	0.25 GPM	2
water closet tank private	3 G/flush	3 G/flush	3
water closet flush valve public	3½ G/flush	3 G/flush	
urinal FV public	1.5 G/flush	1 G/flush	
drinking fountains	not listed	8 G/hour	
kitchen sink private	not listed	0.05 GPM	1
bidet	not listed	0.05 GPM	1

1. With flow restrictor.
2. Any lower flow rate for this type of fixture would not provide proper operation and function of the fixture.
3. Alternate type water closet (tank type) will be investigated as the project design develops. Tank type water closet fixtures utilizing lower flow rates are presently on the market. Our research into the product availability (one gallon per flush) indicates marginal flushing action by the fixture. We will continue our review of products with lower flow rates during the development of the project and, if there is a change in the state-of-the-art for this type of fixture, we will consider it for this project.



Consentini Associates

44 Brattle Street, Cambridge, Mass. 02133

Boston Water & Sewer Company

January 15, 1987

Page 3

Please note that, due to the number of buildings involved and the varying types of programming, variables controlling the selection of systems for construction may change from building to building across the site and even within segments of the same building.

We expect to be presenting information to you on the systems investigated and the reasons for the systems selected for construction at the time of our sewer study/site plan submittal. We would also welcome the opportunity to meet with you or your staff to discuss this issue in general or any specific recommendations you may have to aid us in reducing the impact of our projects on the water supply and/or sanitary sewer systems.

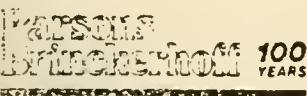
Cordially,

  
Frank G. Teebary

cc: Ellen Watts  
Andrew Boyd  
Michael Lauber  
Kevin Kerr  
Lars Iversen

106/148





**Parsons  
Brinckerhoff  
Quade &  
Douglas, Inc.**

120 Boylston Street  
Boston, MA 02116  
617-426-7330

**Engineers  
Architects  
Planners**

March 13, 1987

Mr. John Hall  
HBC Associates  
600 Atlantic Avenue  
Suite 2100  
Boston, Massachusetts 02210

Ms. Ellen Watts  
Boston Mariner Company  
85 East India Row  
Suite 41E  
Boston, Massachusetts 02110

Dear Ellen and John:

This letter outlines our understanding of the Fan Pier and Pier 4 Developments impact on the Boston Edison Company's electrical distribution system in the Fort Point Channel/Commonwealth Flats area of South Boston.

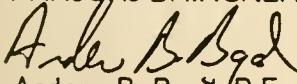
Our discussions with Boston Edison Company engineering personnel have generated the following scenario for meeting the service requirements of the developments without adverse impact on any existing customers.

- o The anticipated initial construction loads can be supplied from the existing distribution network in the Fort Point Channel area of South Boston.
- o The permanent load for the developments will be supplied by a new distribution system in Congress Street, Sleeper Street, and existing Northern Avenue that will bring additional power from the Atlantic Avenue Substation into the area to meet the developments needs. This additional capacity will be available at the Atlantic Avenue substation due to the construction of a new substation, on Chatnam Street. This new substation will allow the transfer of enough load from the Atlantic Avenue substation to accommodate the anticipated loads from new development in the southern part of the Financial District as well as the Fan Pier and Pier 4 developments.
- o The projected loads for the anticipated long term development in the area exceed the capacity of the existing substations and will require the construction of a local substation in this part of South Boston. Once this substation is on line, the Fan Pier and Pier 4 Developments service will be transferred from Atlantic Avenue to the new station.

At no point during the construction of the system required to support the proposed developments will service to adjacent areas of the City be adversely impacted. Once the anticipated long term system is in place the electric service in adjacent areas of the City of Boston will be enhanced as existing load is transferred to the new facilities.

Very truly yours,

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

  
Andrew B. Boyd, P.E.  
Project Manager

cc: R. Kaye (SOM)





gas

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JAN 28 1987

OFFICE OF THE SECRETARY  
OF ENVIRONMENTAL AFFAIRS

Boston Gas Company  
One Beacon Street  
Boston Massachusetts 02108  
Telephone (617) 742-8400

Walter J. Flanerty  
Vice President  
Marketing Public  
Relations and Rates

Mr. James Hoyte, Secretary  
Commonwealth of Massachusetts  
Executive Office of Environmental Affairs  
100 Cambridge Street, 20th floor  
Boston, MA 02202

RECEIVED

JAN 28 1987

January 28, 1987

RECEIVED  
JAN 28 1987Subject: Fan Pier and Pier 4 Developments

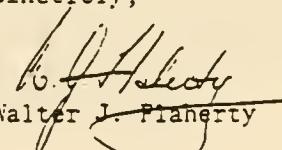
Dear Secretary Hoyte:

Boston Gas Company has examined the Final Environmental Impact Report, EOEA #4426/4584, for the Fan Pier and Pier 4 Developments on the Fort Point channel. We strongly support and endorse these two exciting developments which we believe will be harbingers of continued major growth in the area.

Our proposed distribution system will have the capacity to service not only these developments but provide for all foreseeable development in the area. Surrounding communities will be positively impacted by the strengthened distribution system and all of our customers will benefit indirectly through lower prices from the added revenue generated.

We look forward to serving these outstanding additions to our city.

Sincerely,



Walter J. Flanerty

WJF:pl





**Parsons  
Brinckerhoff  
Quade &  
Douglas, Inc.**

120 Boylston Street  
Boston, MA 02116  
617-426-7330

**Engineers  
Architects  
Planners**

March 13, 1987

Mr. John Hall  
HBC Associates  
600 Atlantic Avenue  
Suite 2100  
Boston, Massachusetts 02210

Ms. Ellen Watts  
Boston Mariner Company  
85 East India Row  
Suite 41E  
Boston, Massachusetts 02110

Dear Ellen and John:

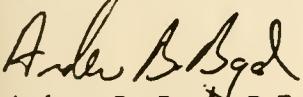
This letter outlines our understanding of the Fan Pier and Pier 4 Developments' impact on New England Telephone Company's telecommunications system in the Fort Point Channel/Commonwealth Flats area of South Boston.

New England Telephone Company (NET) has been upgrading its distribution system over the last several years in order to meet the telecommunications requirements of the new World Trade Center and in anticipation of the Fan Pier and Pier 4 Developments, as well as the expected long-term development in this area of South Boston. This effort has included: the construction of a satellite switching station in NET's existing facility on Congress Street; the construction of a fiber optic communications link between this facility and NET's main switching office downtown; and the construction of new conduit systems in Congress, Sleeper, Pittsburgh, Farnsworth, and B Streets in anticipation of the new street network proposed by the City.

NET is ready to meet the Fan Pier and Pier 4 Developments' needs by extending its telecommunication systems in any one of the streets previously mentioned. Although the long-term service planning anticipates all of these systems being available and interconnected to assure the most reliable service, the distribution system presently under construction will allow the upgrading of existing service to adjacent portions of the City and is planned to be implemented without disruption in service to any existing users.

Very truly yours,

PARSONS, BRINCKERHOFF, QUADE & DOUGLAS, INC.

  
Andrew B. Boyd, P.E.  
Project Manager

cc: R. Kaye (SOM)







Government Documents

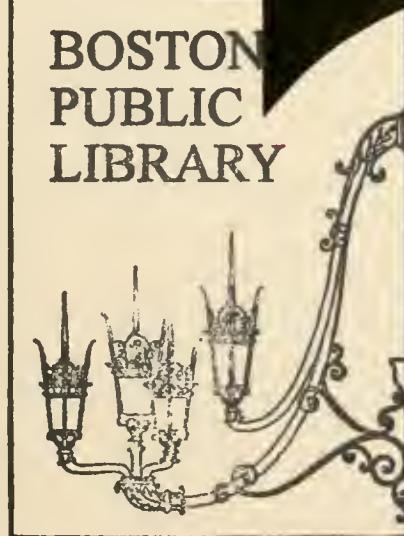
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Suppl.  
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# Supplementary Report Information

## Project Benefits Infrastructure

Fan  
Pier  
Development

Pier  
4  
Development



Submitted to:  
**The Boston Redevelopment Authority**

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Developers:  
**HBC Associates (Fan Pier)**  
**The Boston Mariner Company (Pier 4)**

March 30, 1987

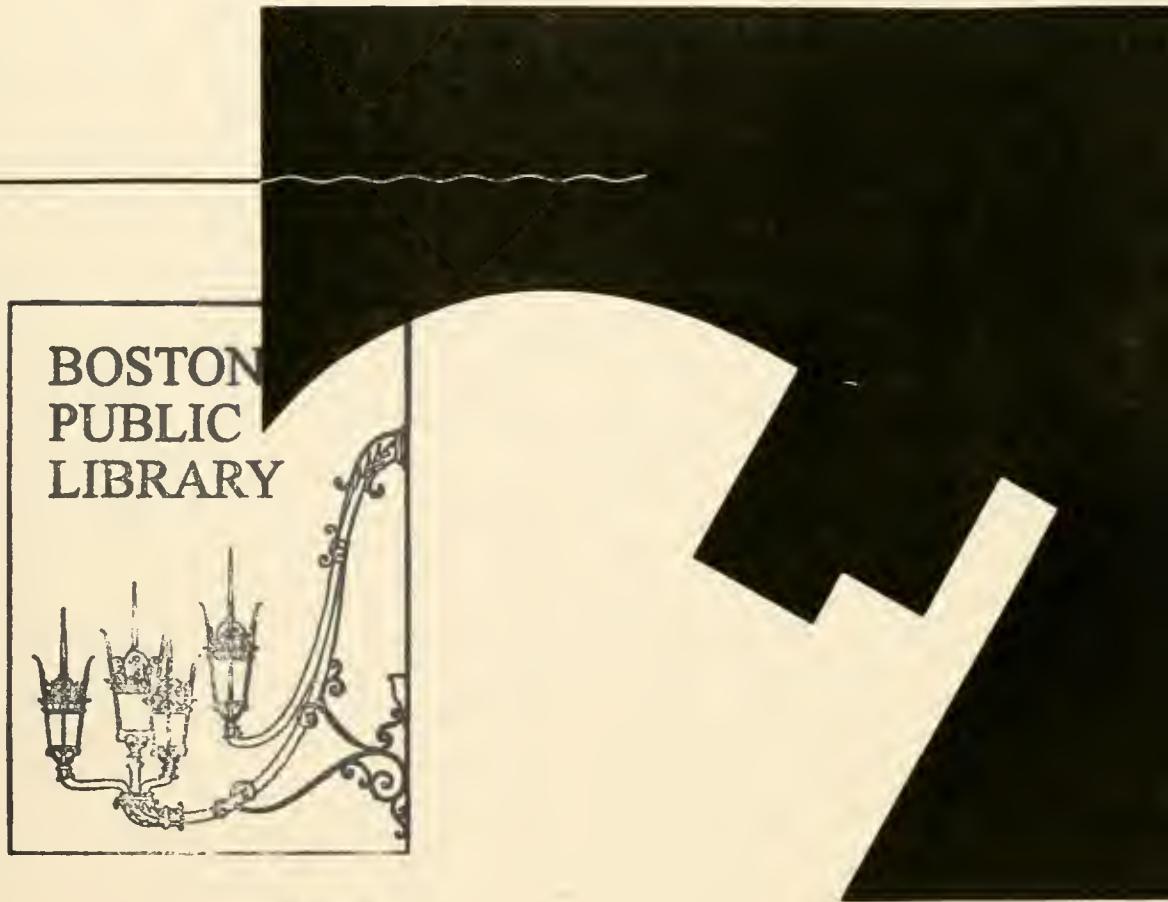


# Supplementary Report Information

## Project Benefits Infrastructure

Fan  
Pier  
Development

Pier  
4  
Development



Submitted to:  
The Boston Redevelopment Authority

---

Developers:  
HBC Associates (Fan Pier)  
The Boston Mariner Company (Pier 4)

March 30, 1987



SUPPLEMENTARY REPORT INFORMATION FOR FAN PIER/PIER 4

PROJECT BENEFITS REPORT  
DATED MARCH 16, 1987

INFRASTRUCTURE REPORT  
DATED MARCH 16, 1987

MARCH 30, 1987



TABLE OF CONTENTS

<u>Item</u>	<u>Tab Number</u>
Project Benefits Report dated March 16, 1987: substitute Page 3	1
Project Benefits Report dated March 16, 1987: substitute page 15	2
Project Benefits Report dated March 16, 1987: substitute page 24	3
Infrastructure Report dated March 16, 1987: substitute pages 5 and 5A (Infrastructure Schedule)	4
Infrastructure Report dated March 16, 1987: additional letter to be added as Appendix G	5







Delete page 3 of the Fan Pier  
Development/Pier 4 Development  
Project Benefits Report dated  
March 16, 1987 and substitute  
therefor the following page 3.



## SUMMARY

Fan Pier/Pier 4 developments will create 4.6-million sq. ft. of mixed-use space -- residential, office, hotels, retail space and a public cultural facility -- transforming a mostly vacant, publicly inaccessible and deteriorated area into a vital part of the City of Boston. This will be accomplished through unparalleled private investment. No project in Boston's history has provided greater public benefits.

### Public Amenities

- Open Space - 15 acres; 60% of land area
- Harborwalk - 1-½ miles
- Canal, Waterfront Park, Harborpark Overlook, Pedestrian Plaza
- Marina
- Water transportation - public docking facilities
- Collaborative design by outstanding architects
- Improved water quality in Boston Harbor
- Traffic study, South Boston
- Water Transit Study

### Housing

- Linkage - \$15-million
- Market-rate housing - approximately 1,000 units
- Affordable housing - 100 units on-site plus assistance in creation of a substantial number of units off-site
- \$2-million South Boston Neighborhood Stabilization Fund

### Jobs

- 3,400 construction jobs
- 10,250 permanent jobs
- \$3-million for job training
- Resident, minority and women hiring
- South Boston Job Stop

### Taxes

- \$18,000,000 in new real estate taxes
- \$ 8,000,000 in new sales and retail taxes

### Public Cultural Facility

- Developer donated building site on the Boston Harbor
- \$3,000,000 in infrastructure improvements

### Northern Avenue Corridor Planning

- On-going cooperation in area planning







Delete page 15 of the Fan  
Pier Development/Pier 4 Development  
Project Benefits Report dated  
March 16, 1987 and substitute  
therefor the following page 15.



Linkage Commitments

The two Developments will generate housing linkage payments equal to the following:

Fan Pier (2,145,757 square feet of linkage generating space)

Total linkage payments	\$10,728,785
------------------------	--------------

Pier 4 (941,819 square feet of linkage generating space)

Total linkage payments	\$ 4,709,095
------------------------	--------------

Total (3,087,576 square feet of linkage generating space)

Total linkage payments	\$15,437,880
------------------------	--------------

The Fan Pier/Pier 4 developers would designate that its linkage payments be made available to create affordable housing as follows:

On-Site Affordable - 100 Units

- 35% of the linkage payments from Fan Pier may be applied towards creation of the 100 units of affordable housing in Building F on Fan Pier, as described above.

Impact Area Affordable - Up to 150 Units

Fan Pier/Pier 4 enthusiastically supports the City's intention to assemble a housing site or sites in the impact area







Delete page 24 of the Fan Pier  
Development/Pier 4 Development  
Project Benefits Report dated  
March 16, 1987 and substitute  
therefor the following page 24.



Contribution Grant from Fan Pier will total approximately \$2,145,757, while the Jobs Contribution Grant from Pier 4 will total approximately \$941,819.

The developers have met with the Mayor's Office of Jobs and Community Services (OJCS) in order to discuss creative possibilities for applying these jobs linkage payments to projects of special interest to the impacted community. The developers are assured by OJCS that specific proposals for job training and outreach projects suggested by the Fan Pier/Pier 4 CAC will receive serious consideration.

OJCS will open model "Job Stop" offices this year; one of them will be in South Boston. This office will establish a clearinghouse for job training and employment opportunities, and promote job benefits for South Boston residents. The scheduled date for opening is July 1987. The Fan Pier and Pier 4 proponents have discussed the planned operation of the Job Stop office in anticipation of directing notice of job training and employment opportunities arising from the Fan Pier and Pier 4 hotels, offices, stores and restaurants, through this new City-sponsored program.

The Fan Pier developer expects that these job linkage funds will, among other things, support a pre-apprenticeship program to provide assistance to persons seeking to apply for union apprenticeship. In order to assure South Boston representation in this program, the Fan Pier developer intends to set up training







Delete page 5 (Infrastructure Schedule) of the Fan Pier Development/Pier 4 Development Infrastructure Report dated March 16, 1987 and substitute therefor the following pages 5 and 5A (Infrastructure Schedule).



BECO will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by BECO in anticipation of revenue generated by the projects.

The Developers will work with BECO and the responsible agencies to coordinate construction of the proposed system modifications site and local roadway construction to ensure the availability of the required electric capacity and to minimize the impacts on traffic and existing services.

BECO has indicated that, through alterations to the existing system, BECO will be able to supply power to the area on an interim basis from either Atlantic Avenue or L Street Stations for construction of the Fan Pier and Pier 4 Projects and the first several load additions associated with the Developments. However, this load must be transferred to a new station in the Northern Avenue area, scheduled to be in service in 1993, which will be the source for the permanent loads of the Fan Pier and Pier 4 Developments as well as projected Fort Point Channel/Commonwealth Flats developments.

#### ■ Gas System

On-site, the Developers are responsible for the planning, engineering, and construction of the gas system subject to the review and approval of Boston Gas.

Off-site, the Developers will continue their ongoing coordination effort with Boston Gas staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-20, in Chapter II of this report).

Boston Gas will be responsible for the planning, engineering and construction of any modifications required for its system to meet the needs of the Fan Pier and Pier 4 Projects. The cost of these efforts will be born by Boston Gas in anticipation of revenue generated by the projects.

The Boston Gas Company, in anticipation of the necessity to increase its existing gas supply capability, has upgraded its service to the B Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other areawide load demands on that system.



The Developers will work with Boston Gas and the responsible agencies to coordinate the construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required gas capacity and to minimize the impacts on traffic and existing service.







Add the following letter dated  
March 19, 1987 from G.R. Sullivan  
to Stephen F. Coyle as Appendix G  
of the Fan Pier Development/  
Pier 4 Development Infrastructure  
Report dated March 16, 1987.



March 19, 1987

Mr. Stephen F. Coyle, Director  
Boston Redevelopment Authority  
One City Hall Square  
Boston, MA 02201

Dear Mr. Coyle,

**SUBJECT: Boston Edison Company comments on Report -  
Infrastructure for Fan Pier/Pier 4 Developments**

We have reviewed the Fan Pier/Pier 4 Infrastructure Report dated March 16, 1987 and submitted to the Boston Redevelopment Authority. It is our understanding, following further meetings with the developers on March 18, 1987, that the intent of the first paragraph on Page 5 (Infrastructure Schedule) of the report is as stated on page VI.2-33 of the report. Page VI.2-33 acknowledges that the existing electric supply in the Fort Point Channel area will need to be augmented to support the Fan Pier and Pier 4 developments as well as the other projected development in the area.

We expect that through alterations to the existing system, we will be able to supply power to the area on an interim basis from either Atlantic Avenue or "L" Street Stations for construction of the project and the first several load additions associated with the developments. However, this load must be transferred to a new station in the Northern Avenue area, scheduled to be in service in 1993, which will be the source for the total permanent loads of the Fan Pier/Pier 4 developments as well as projected Fort Point Channel/Commonwealth Flats developments.

Very truly yours,

G. R. Sullivan

G. R. Sullivan  
Manager, Distribution & Planning Section  
Electrical Engineering & Station  
Operations Department

GRS/jfi

cc: Mr. John Q. Hall: HBC Associates  
Ms. Ellen A. Watts: Boston Mariner Co., Inc.  
Mr. Peter Diana: Hale & Dorr  
Mr. Andrew Boyd: Parsons, Brinckerhoff, Quade & Douglas  
Mr. C. B. Damrell









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